User's Guide

For LaserPro Jupiter
J-25 / J-30

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NOTICE

For Firmware (V1.1 and later version), when under the Single File Mode, the file can be repeated if you choose to redo it. After the work is completed, the machine will be back to the “STOP” status. The same file will be processed again if you press the “START” key again. One thing that has to take into consideration is that the file size has to be smaller than 15.9 MB (if memory buffer for your machine is 16 MB) or 63.9 MB (if the memory buffer you have is 64 MB). If you choose to start with a new file, you would have to press the “DEL FILE” button twice to clear out the memory. Then the machine will be ready to receive new data again.

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UNPACKING

Caution:

- The weight of LaserPro JUPITER is about 115 kg (253 ponds). To prevent damage to machinery or injury to workers, please get assistance. Do not lift the equipment alone.
- Please save the original shipping carton in case any returning service is needed.
- Please inspect what you have received from the shipped carton by comparing with the following listed items.

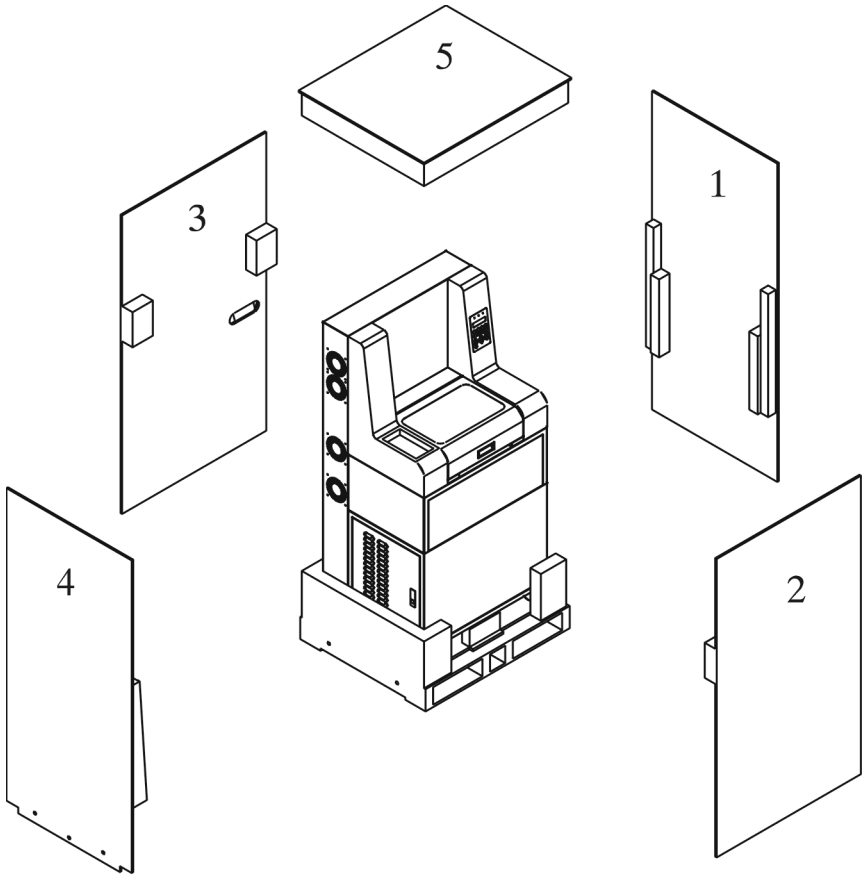
Unpacking inspection

Your package should contain the following items:

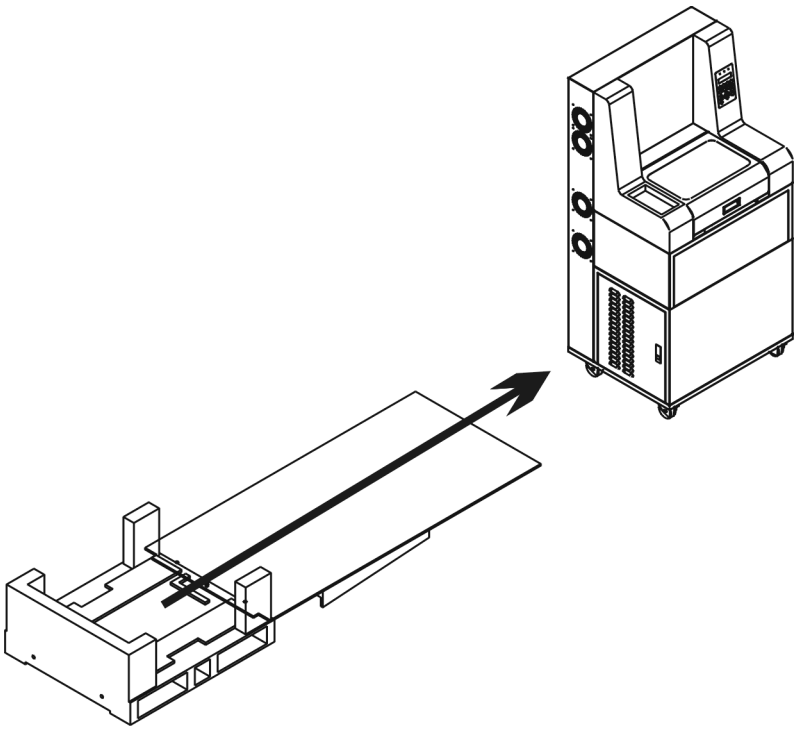
ITEM	QUANTITY
Cleaning Set cotton swab lens cleaner lens tissue (lint free)	 1 pack 1 1
1.5” Manual Focus Gauge (blue color)	1
AC Power Cord	1
Print Port Cable	1
LaserPro JUPITER Driver	1
Mirror (for X, Y-axis Mirror)	1
Engraving Samples	1 pack

Unpacking Steps

Step 1.
Using an M12 open end or impact wrench, unscrew and remove the 4 sides and the top of the crater in the order as specified in the following figure.



Step2.
Use one of the removed panels to form a slope and then roll the machine out of the crater base.



Step3.
Save the crater for shipping in case any returning service is needed.

QUICK MENU

1. Connect air exhaust system.
2. Setup computer and connect with engraving system properly.
3. Turn **ON** host computer system.
4. Install the **Jupiter** Driver. (for the first time use only)
5. Use Windows-based program (such as CorelDRAW, PhotoShop, PhotoPaint, Illustrator, CASmate, Signlab, EasySign, AutoCAD, etc.) to operate with the engraver.
6. Turn **ON** engraver. The working table moves down 50mm aaproximately after system initialization and the lens carriage moves to the home position (upper left corner).
7. **Auto-focusing:** under **STOP** status, put work-piece on the table, move X-axis (Please refer to Fig. 7) and carriage by arrow keys to locate the lens carriage above the engraving material (holding carriage by hands for prompt moving is acceptable under STOP condition but not recommended). Press **AUTO FOCUS** the table will move up then down to the focal position automatically.
8. The following is an example by using **CorelDRAW V.7.0**.
   Layout ⟶ **Page Setup** ⟶ **Set from Printer,** choose **Portrait** ⟶ **OK** ⟶ Edit desired file (picture etc.) ⟶ **File** ⟶ **Print** ⟶ **Properties** ⟶ **Options,** choose **desired Mode** (refer to Fig. 13) then set up proper resolution, power and speed ⟶ **OK** ⟶ **Print**
   File name is shown on LCD then press **START.**
   (Please refer to page 14, **Start to Operate,** for detail operation in different mode selection)

NOTICE:

1. When operating with **CorelDRAW V.8.0**, please choose **Landscape** ***for Page Setup*** when X > Y **;** choose **Portrait** when X < Y ⟶ **O.K.**.

2. When using the available artworks from the Clipart of CorelDRAW, ***to prevent the hidden vector lines shown on your engravings***. Please do as follows:
CorelDRAW, choose file from Clipart ⟶ **Bitmaps** ⟶ **Convert to Bitmap** ⟶ Click **Color** then choose **Grayscale** ⟶ **Ok**

3. In order to match Jupiter driver's color. Make sure your **CorelDRAW V.8.0** or **V.9.0** the **'Calibrate colors for display '** is disable. Please fallow the steps:
Tools ⟶ **Options** ⟶ **Global** ⟶**Color Management** ⟶ Disable **'Calibrate colors for display '** ⟶ **OK.**

NOTE:

- If the memory buffer is set up in **Single file** mode, under **START** condition, the engraver will start to engrave/cut upon receiving a file. While if the memory buffer is set up in **Multiple File** mode, receiving at least one complete file then press **START** to start a job (refer to page 14, **Start to Operate**).
- Choices of ***DPI must be the same*** for both editing and printing out a file.
- Turn on the air exhausting system before engraving.
- The ***maximum loading weight*** of working table is ***10 kg***.
- When 3D engraving or cutting materials that easily caught on fire, such as *acrylic*, *wood* or *paper*, it is advised to have **Air Compressor** turned on to prevent flame**.**

I. INTRODUCTION

Principles of CO_2 Laser

LASER is a **L**ight **A**mplification by **S**timulated **E**mission of **R**adiation.
A CO_2 laser works by exciting the molecules of a carbon dioxide gas mixture. To engrave, the beam is focused through a lens. The intensive beam can vaporize the surface of the material leaving an engraved image or, in some cases, cutting through the material.

Safety

The safety rating of Class 1 by CDRH means that the laser beam is enclosed in a cabinet and has safety interlock mechanisms to protect the operator from injury. While when a class 1 laser system equipped with a red dot pointer which allows you to position laser beam, the safety rating turns into Class 3a due to the red beam is laser light. A few extra safety precautions; namely, **avoid placing your eyes in the red beam path,** is required.

- ## Precaution

1. Do not attempt to modify or disassemble the laser system at any time.
2. Always wear appropriate safety goggles especially when operation, especially engraving with mirrors or coated metals such as enameled brass and anodized aluminum.

   NOTE: Each LaserPro laser machine is equipped with a safety goggle, if you need another one, please contact LaserPro for it or try to get one that meets the following specification.

   190-398 nm OD5+
   10,600 nm OD5+
   Visible light transmission: 92.9%

3. Good ventilation is required to remove odors and vaporized materials to the outside of the building or structure. An exhausted system is recommended.
4. Invisible intensive laser radiation may cause physical burns or sever eye damage. Always read the manual and caution labels carefully before operation.

5. Do not work with reflective metals, heat sensitive surfaces or other materials that may produce toxic substances, such as PVC and Teflon.
6. A fire extinguisher should be available on hand at any time.
7. Never leave the machine unattended during operation.
8. Follow the recommendations for maintaining and cleaning your system. Not only will this enable you to engrave efficiently, it will ensure that your machine runs safely as well.

- **Fire Precaution**

1.When 3D engraving and cutting materials that easily caught on fire, such as acrylic, wood or paper, it is advised to have air compressor turned on to prevent flame.

2.If cutting table, or honey comb table, is used for cutting purpose, do not leave any material underneath, as when material at top is cut through, the material at below will be burned easily due to trapped heat.

3.It is not encouraged leaving the cutting job unattended, especially with materials mentioned above.

- **Warning Label**

DANGER
INVISIBLE LASER RADIATION WHEN OPEN AND INTERLOCK FAILED OR DEFEATED
AVOID EYE OR SKIN EXPOSURE
DIRECT OR SCATTERED RADIATION

On the center of the top door.

WARNING!!
Do not use reflective metals, heat sensitive surfaces or other materials that may produce toxic substances, such as PVC and Teflon.
Any corrosion caused by working on an unsuitable substances will not be covered in the warranty.

On the front center of the top area.

CAUTION
AVOID PLACING YOUR EYES IN THE RED BEAM PATH

On the front center of the top door.

Frequently Asked Questions

1. What materials can be processed by CO_2 laser?

Virtually any materials such as acrylic, wood, fabrics, glass, leather, marble, stone, rubber stamps, paper products, coated metals, plastics (especially micro plastic developed by IPI, Spectrum and Rowmark etc.) other hard-surface materials blended with polyester and fibers (Corian™, Fountainhead™, and Avonite™ etc.) or laserable simulated products of stone, wood and metal etc.

Bare metals can not get a good engraving result by using CO_2 laser. However, ***special kind of spray*** has been developed that allows CO_2 laser to mark on the bare metals such as stainless steel, aluminum etc. Do not engrave or cut materials which are heat sensitive or toxic substances can be produced ***(e.g. PVC and Teflon coating)***.

2. What is the life cycle of the laser source?

The life cycle of laser source is around 20,000 hours, however it can be re-filled and should be done by your dealer.

3. What is the main purpose of air assist system?

The air assist system can provide a much better engraving & cutting effect, as it will blow away vaporized particles and prevent fire due to overheating.

4. What is the maximum engraving speed of LaserPro Mercury?

The maximum engraving speed of LasePro Jupiter is 1066 mm/sec (42 inch/sec). When engraving the size 18 x 28 cm square with 250dpi at full speed, it takes LaserPro Jupiter about 18 minutes to complete.

Front View

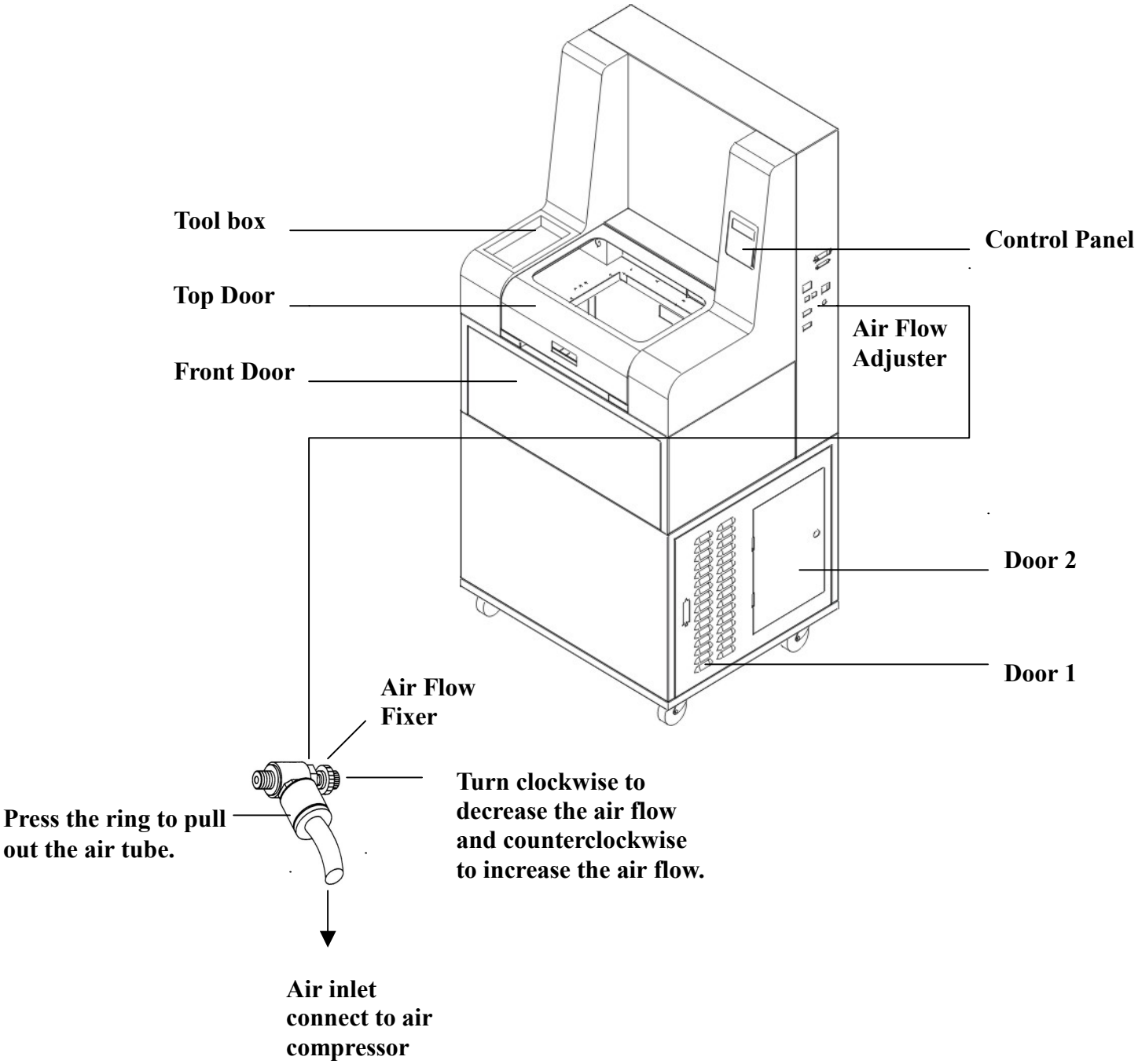
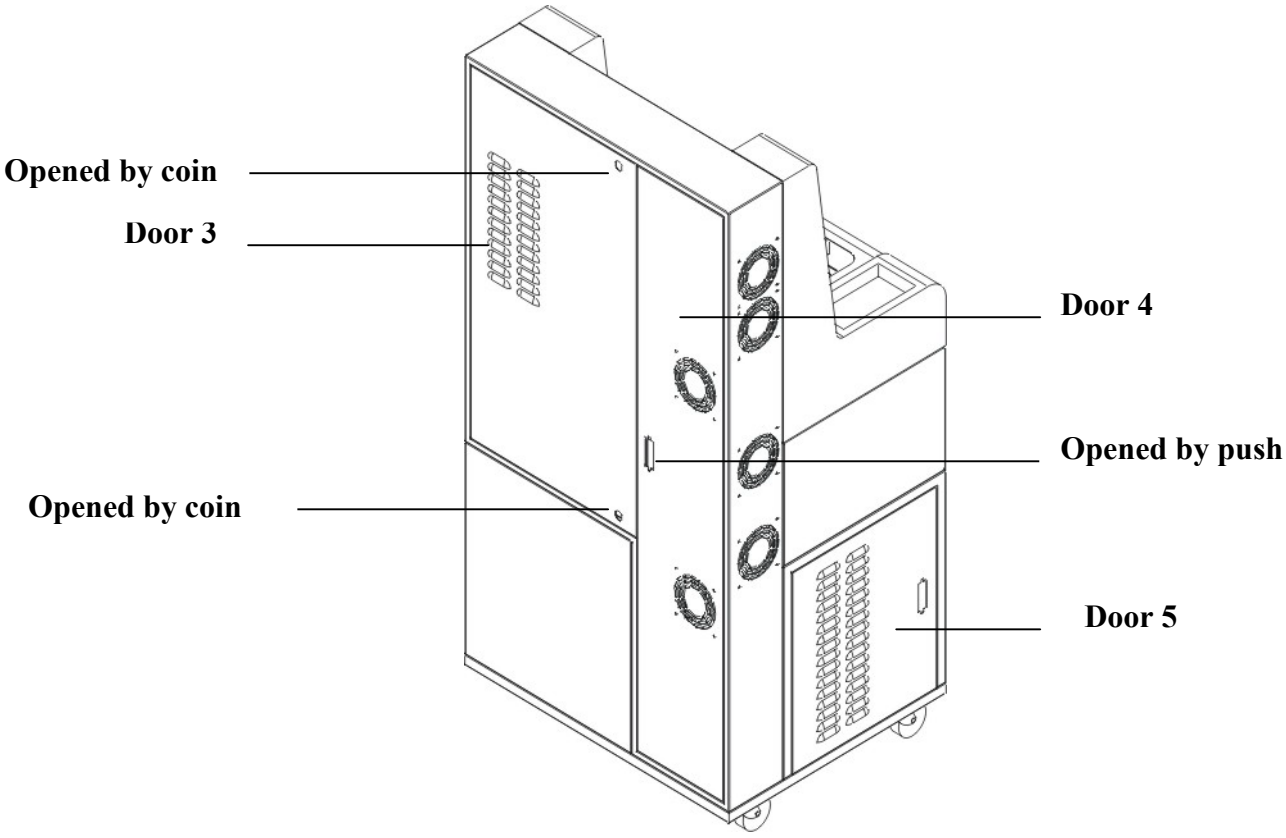


Fig. 5

Back View



****Please keep at least 10cm distance against the wall to avoid overheating.**

Fig. 6

Motion System

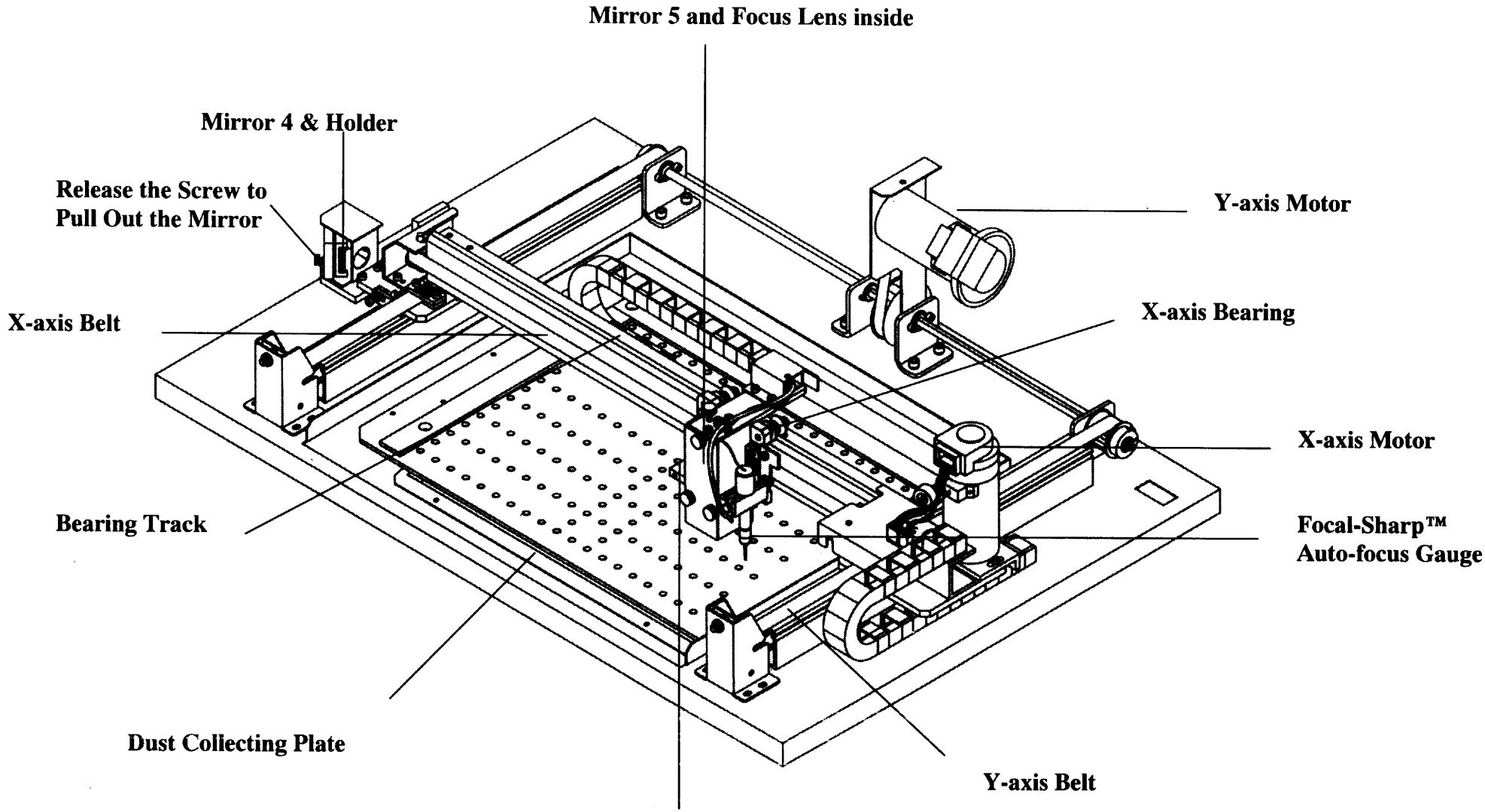


Fig. 7

LENS and MANUAL FOCUS GAUGE

Focal Length		Matched Color	
		LENS	MANUAL FOCUS GAUGE
1.5”	Standard	Purple	Blue (same as 2.0”)
2.0”	Option	Blue	Blue
2.5”	Option	Gold	Gold
4.0”	Option	Red	Red

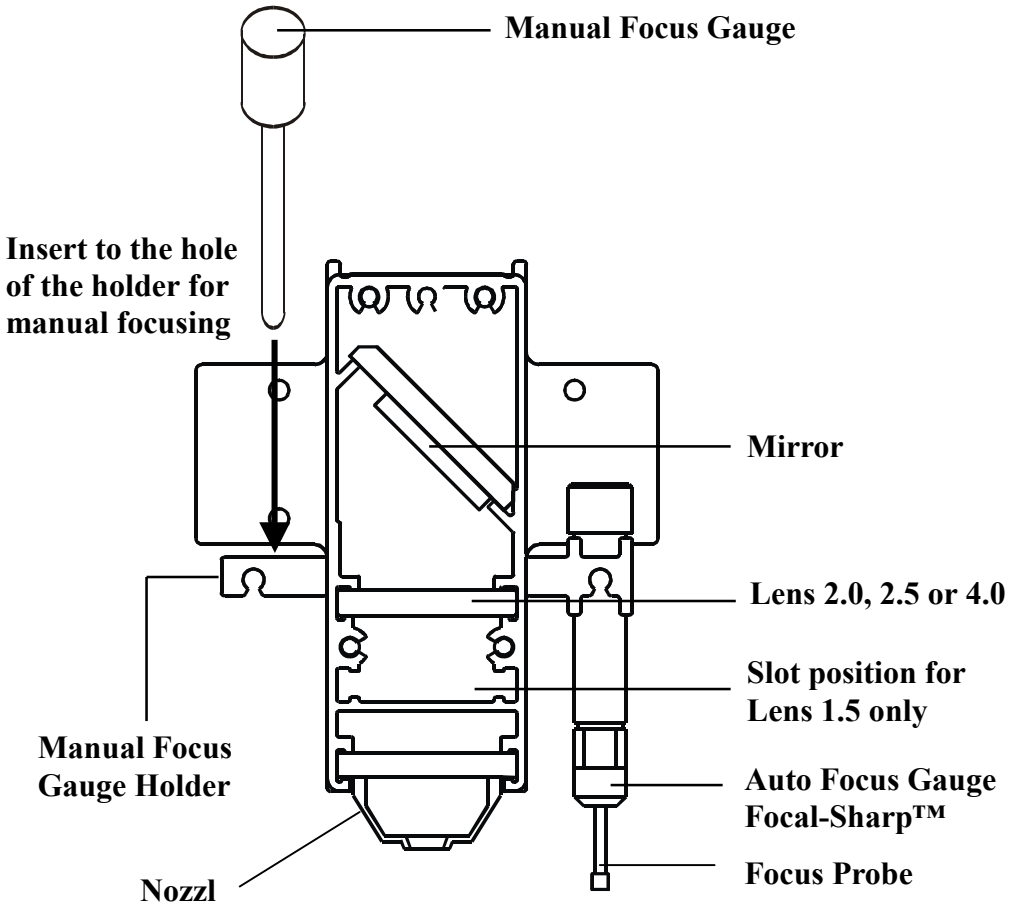

Manual Focus Gauge
Insert to the hole of the holder for manual focusing
Mirror
Lens 2.0, 2.5 or 4.0
Slot position for Lens 1.5 only
Manual Focus Gauge Holder
Auto Focus Gauge Focal-Sharp™
Nozzl
Focus Probe

Figure of Focus Carriage

Fig. 8

II. RECOMMENDED CONFIGURATION

Computer: Your PC must be sufficient to equip with Window 95 at least. We recommend the specification of PC for better work as below:

CPU	Pentium at least
DRAM	32 MB RAM or up
FDD	One 3.5" 1.44 MB floppy
HDD	1.2 GB Hard Drive or up
SVGA	15" Super VGA Monitor

★ ★On Board Parallel Mode(Setup from PC BIOS):

SPP—Preferred Mode

ECP—Cable length less than 1.8meters

Scanner

Flat Bed

Minimum resolution: 200 DPI

Software

GCC driver (designed under Window 95 or higher level)

Windows	Window 95 or higher
CorelDRAW	7.0 Version or up

Any program that can output HPGL commands

III. HARDWARE INSTALLATION

Caution:

- Turn all equipment off before making any connection.
- Check the plug of the power cord to see if it matches the wall outlet. If not, please contact your dealer.

Cabling Connection:

1. Insert the power cord (male) into a well grounded power outlet.
2. Plug the other end (female) into the engraver. The engraver has been design to switch from 100 ~ 240 VAC automatically .
3. The engraver can communicate with a computer through either a serial (RS-232C) or a parallel port (Centronic).

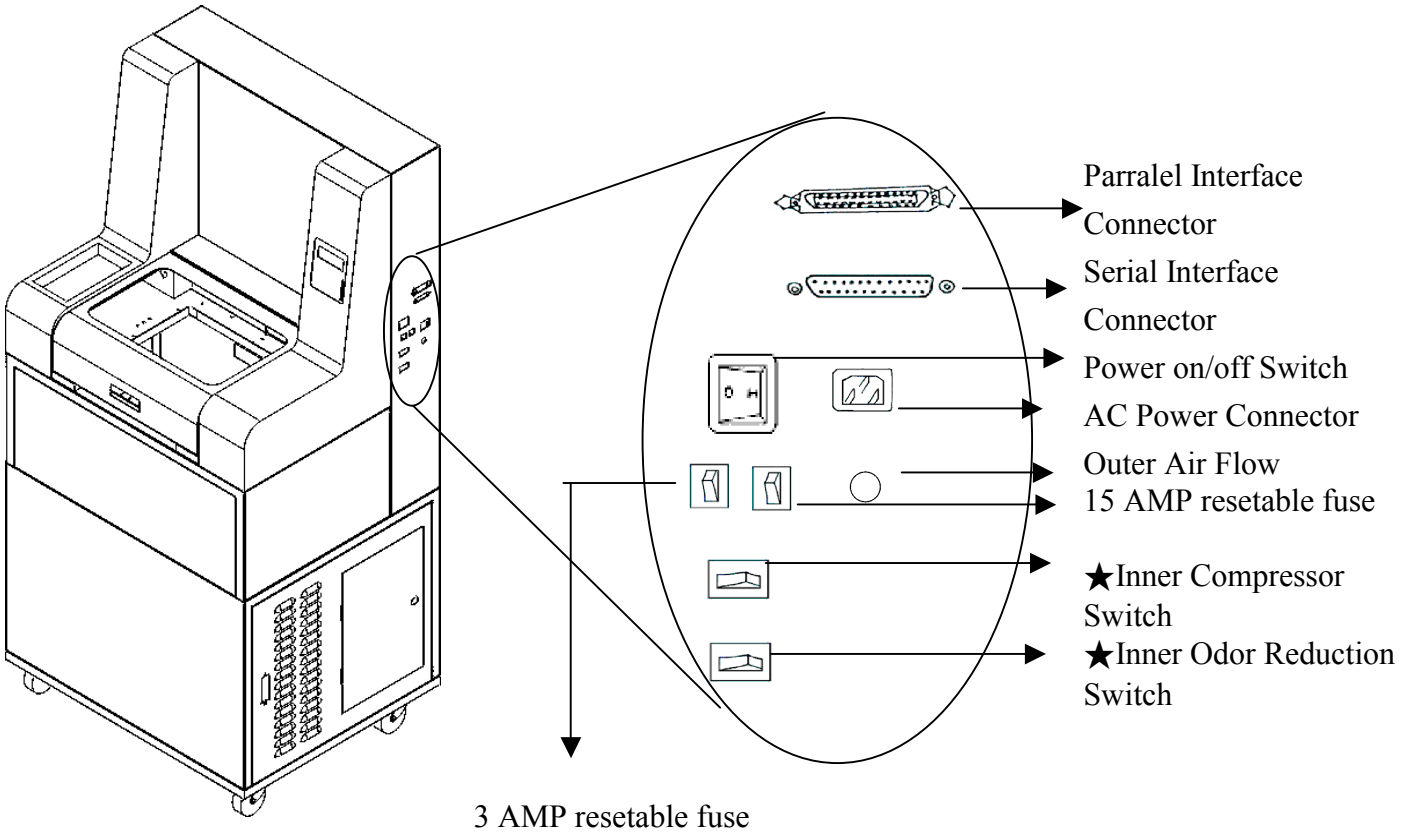


Fig. 9

Note: ★Options of G.C.C. products.

- **Parallel Transmission**

  Connect a parallel cable to the engraver (parallel port) then to the parallel port of the host computer.

Caution:

Never use a mechanical switch box when a second printer port is required.
The electrical surges can cause damage to the computer and the engraver.

- **Serial Transmission**

  If you are using IBM PC, PS/2 or their compatibles, connect the supplied RS-232C cable to the engraver (serial port) then to the serial port of the host computer.

- **Interface for Macintosh**

  To operate the engraver with a Macintosh computer (e.g. Power Mac), you need a MAC modem cable (DIN8 to DB25) as an adaptor to connect to the RS-232C cable.

Exhaust Vent

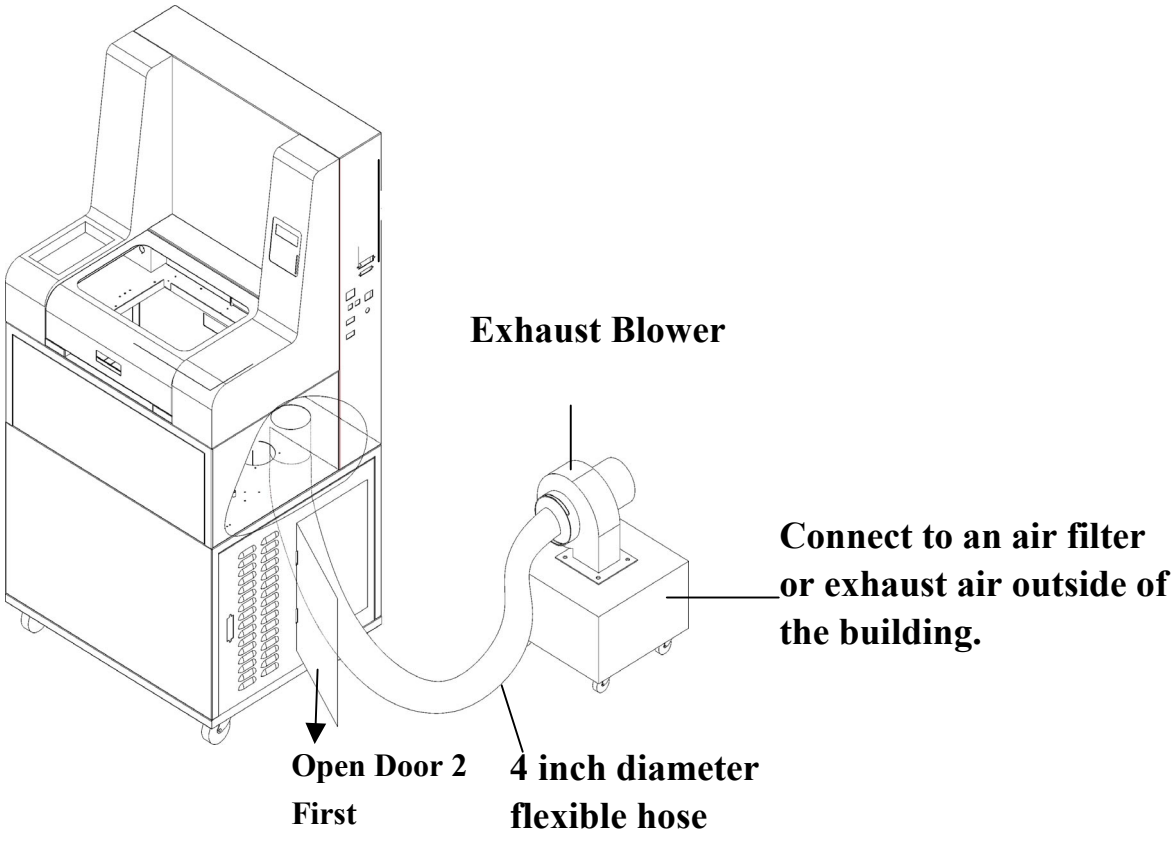

Exhaust Blower
Connect to an air filter or exhaust air outside of the building.
Open Door 2 First
4 inch diameter flexible hose

Fig. 10

IV. SOFTWARE INSTALLATION

Install LaserPro JUPITER printer driver for windows 95/98

Power On, click **START**

→ choose **Settings** and click **Printers**

→ Double click **Add printer** and start **Add printer wizard**

→ **Next step**

→ Choose **Local** and click **Next step**

→ choose **Have disk** and click **Next step**

→ Insert the JUPITER Driver disk properly into the floppy drive then click **OK**

→ choose the port where your laser system is connected and click **Next step**

→ name your system or bypass

→ choose the driver to be default printer

→ **Next step**

→ select **No** when asked to print a test page and click **Finish**

Now the LaserPro JUPITER printer driver is installed completely. Don't forget to take the GCC driver disk from the floppy drive and store in a safe place.

V. OPERATION

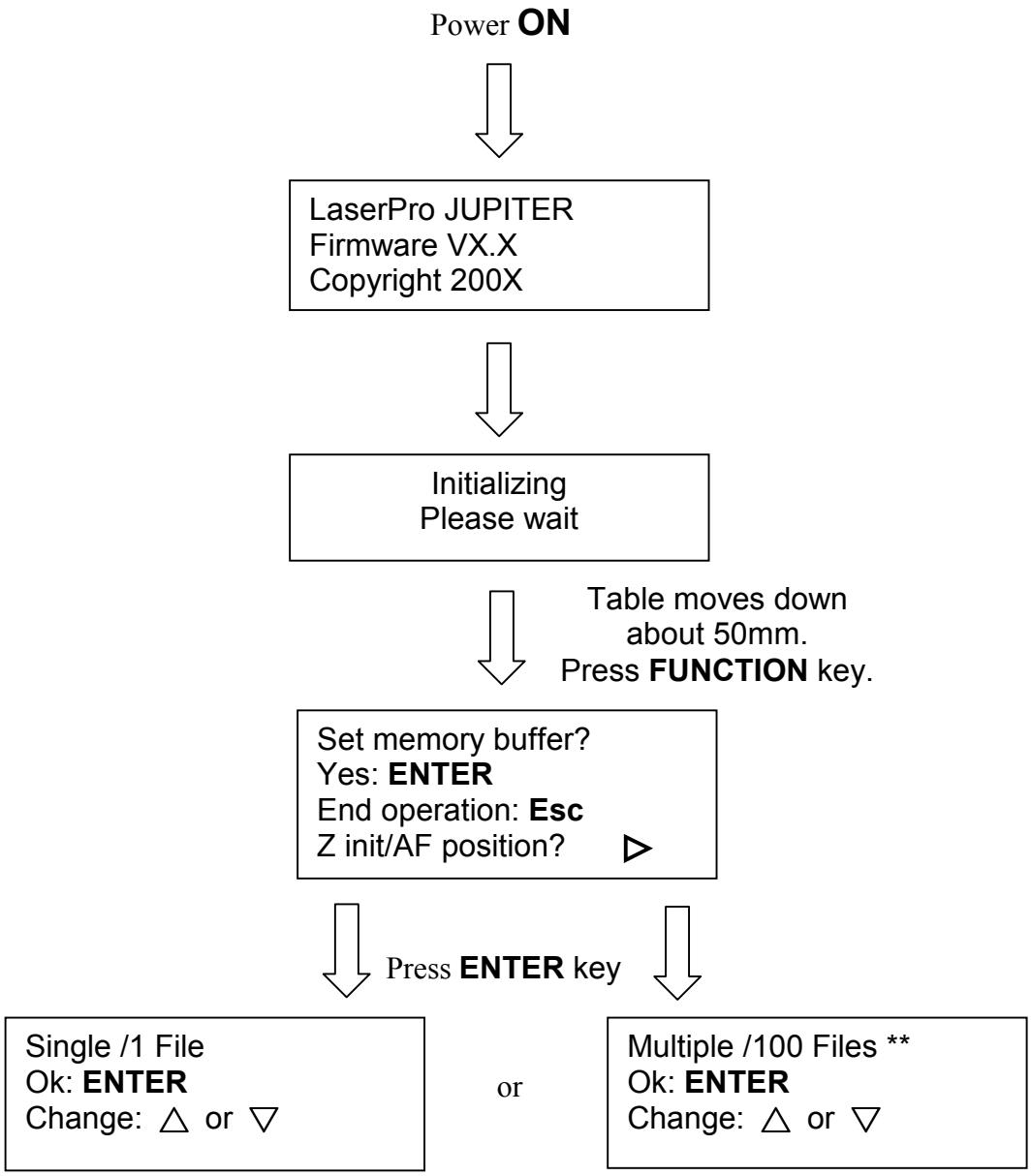
Environment

- A clean, well-ventilated room with a temperature of 15℃~ 25℃ (60°F~78°F) (Strongly suggested the temperature of 25℃) and a relative humidity between 30% and 40%, as an office type environment.
- Stable floor isolated from vibration.
- Avoid from unstable voltage supply.
- Short path for an effective air exhaust.
- Have a fire extinguisher available at any time.

Flexible Utility of Your Memory Buffer.

The standard memory buffer size of Jupiter is 16M and can be expanded to 64 M (32M SIMM x 2). You can choose **Multiple file** mode with limited memory to save files and re-call them for constant applications. Or, you can choose **Single file** mode to get an unlimited data output while still keep files that you saved before under multiple file conditions. However, the file sent under **Single file** mode will not be saved. In other words, every time you want to engrave this file, you have to re-send again from the host computer.

Am I in Multiple File mode or Single File mode now?

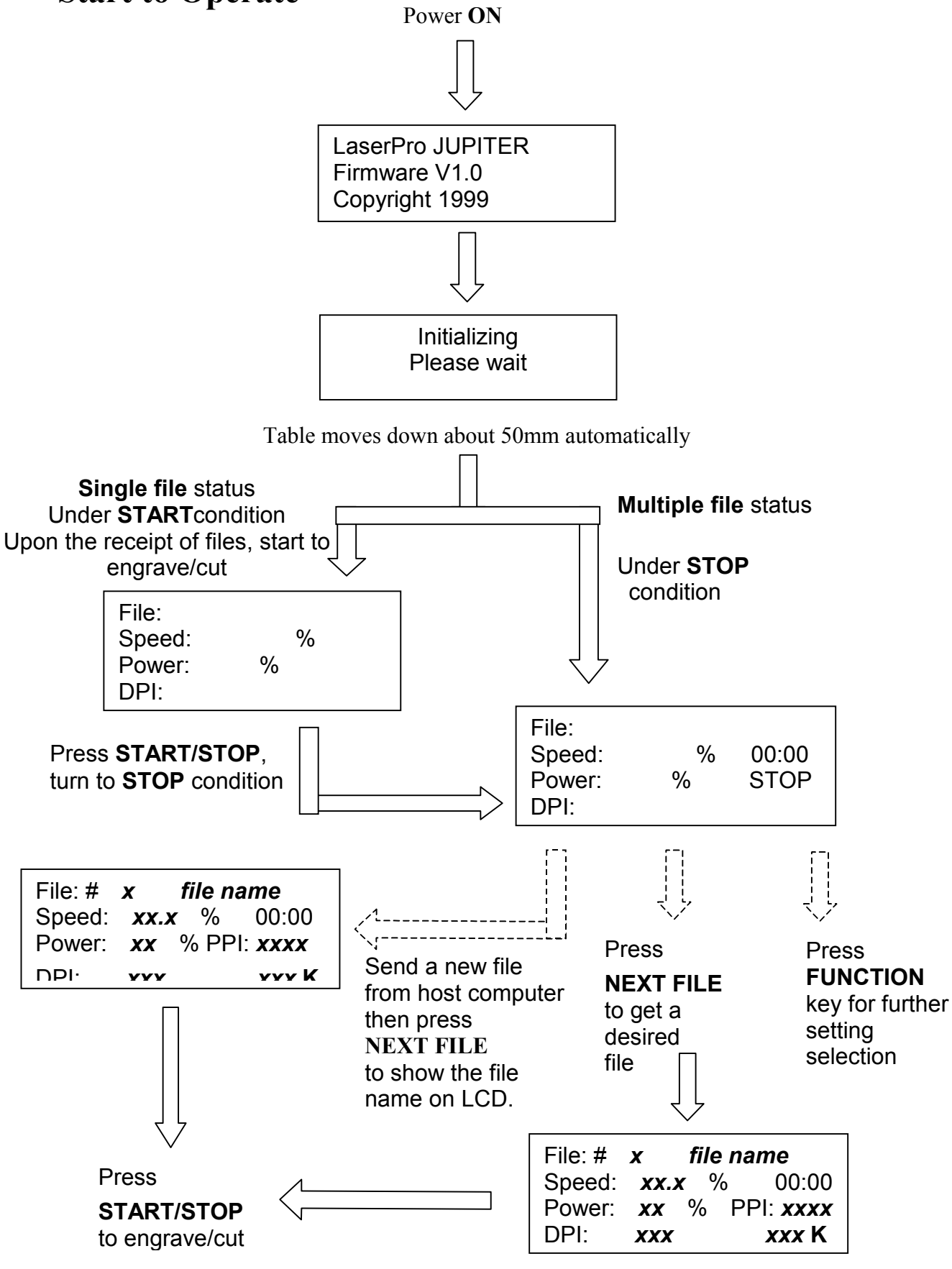


NOTE: **1.** ** means default or current setting.

2. AUTO FOCUS and all other function keys should be operated under **STOP** condition.

3. NEXT FILE and DELETE keys are invalid under Single file mode.

Start to Operate



Control Panel

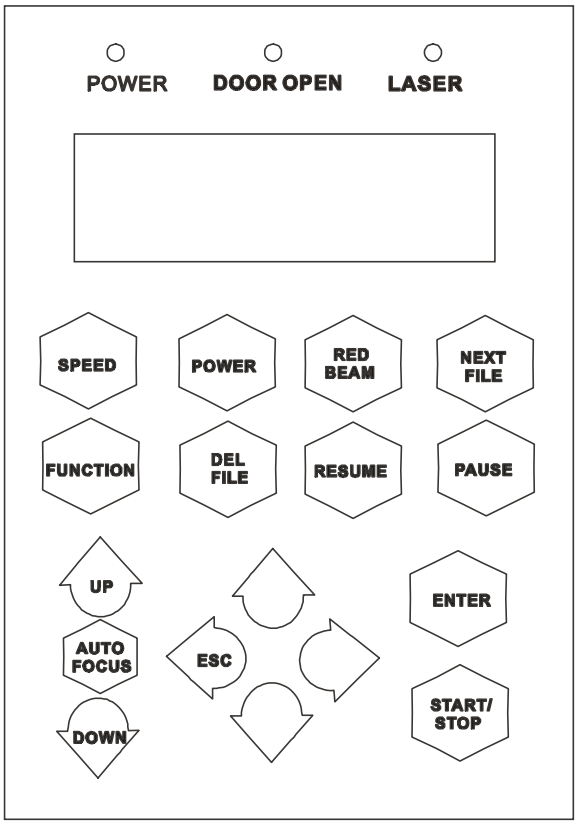


Fig. 11

START/STOP

- **Single File Mode:**

Turn on power, JUPITER is under START condition and ready to receive a file. LCD shows as follows:

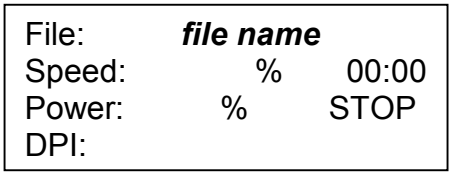
```
File:
Speed:          %
Power:      %
DPI:
```

Upon the receipt of a file, JUPITER starts to engrave/cut immediately. When a job is done, LCD will show the working time such as 100s means 100 seconds.

```
File:       file name
Speed: xx     %     01:10
Power: xx     %     STOP
DPI: xxx
```

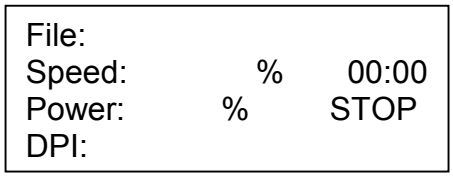
Press **START/STOP** key, turn the engraver to **STOP** condition. LCD shows as follows. Under **STOP** condition AUTO FOCUS and all other function keys can be

operated while NEXT FILE and DELETE keys are invalid under Single file mode.

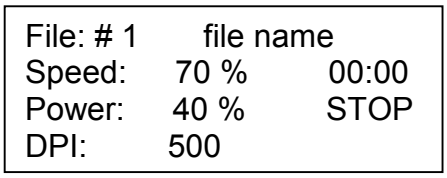


- **Multiple File Mode:**

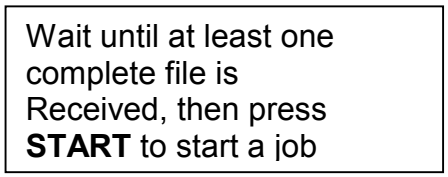
Turn on power, LaserPro is under **STOP** condition and all function keys can be operated. Laser engraver is ready to receive a file. LCD shows as follows.



Upon the receipt of a complete file, LCD will show the following message for instance. Then press **START/STOP** key, the engraver start engraving or cutting.



If there is no file having been sent, the message will display as follows.



NOTE: Please refer to the flow chart of **"Start to Operate"**, page 14 .

ENTER

Accept and store the selection for setting up.

AUTO FOCUS

This key can only be operated under **STOP** condition. Press this key will move up the working table until the engraving object touches the tip of the focus tool, then the table will move down and stop in focus automatically.

Whenever you change a lens with different focal length, press Function key and go through the process of "**Select lens**" (refer to page 23). After changing the lens, press

AUTO FOCUS key to save the new focal length in memory. LCD will show as follows:

Focusing Then do setup or send a file to start a job 0.0 mm

NOTE: **1.** "0.0 mm" means the focus position is the Z-axis home position of the Working table. Above this position the value is negative while below this position the value is positive.

2. Whenever the motion system or working table has ever been adjusted by a technical person, please press **AUTO FOCUS** key to get an initial position before going through the function of "Tune (Auto focusing)" to change the focal length.

NOTICE:

To stop the motion of auto focus, please press either **UP** or **DOWN** arrow key. If you press the key ***continuously***, working table will move up or down correspondingly.

Arrow Keys

Move cursor on the display for selection or adjust the working table on Z position by pressing the arrow keys of **UP** and **DOWN**.

NOTE:

UP key – After initializing, press this key will move up the table. LCD displays:

Focusing Then do setup or send a file to start a job – ***X.X*** mm

During working time (i.e. Start condition), this message won't be shown.

When* Auto Focus *is under process, press* UP *key will stop the motion of Auto Focus and change to up movement.

DOWN key – Same as above function but the motion direction is opposite.

ESC (Escape)

Exit and back to the main menu.

NEXT FILE

This key is valid under **Multiple file** mode only. Press this key the LCD shows

File: # ***x*** ***file name***
Speed: ***xx*** % 00:00
Power: ***xx*** % PPI: ***xxxx***
DPI: ***xxx*** ***xxxxx*** k

The "**k**" message shows on the lower right corner expresses the k bytes memory that has been left over in the buffer.

File: # shows the current working file number. Press **NEXT FILE** each time will increase 1 (i.e. 1, 2, 3…100) and recycle the counting. Once the buffer has received up to 100 files, the LCD shows:

More than 100 files
are not allowed
Please delete some
and send again

If a file received is out of memory, the LCD shows

Not a complete file
due to out of memory
Please delete some
and send again

RED BEAM

On/Off red beam

SPEED

Set up laser speed for desired effect. When working without using JUPITER's driver. Press **FUNCTION** key then select one of the sixteen setups then set up desired cutting speed. No matter you are using JUPITER's driver or not, you can press **PAUSE** key prior to change speed during cutting or engraving. Set up desired speed, press **ENTER** then press **RESUME** to start the job again.

POWER

Set up laser power for desired depth and effect. Other conditions are same as stated in SPEED.

PAUSE

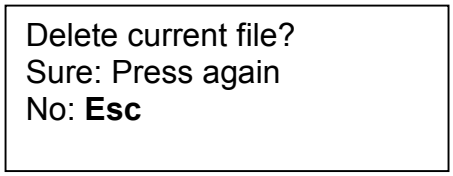
Temporarily stop the job during cutting or engraving.

RESUME

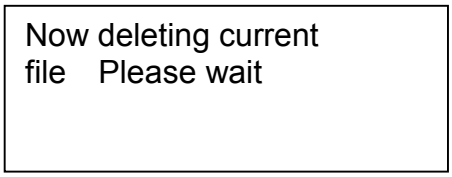
Restart the job after pausing.

DEL FILE

This key (delete file) is valid under Multiple file mode only.



Press DEL FILE again to delete the file and LCD shows



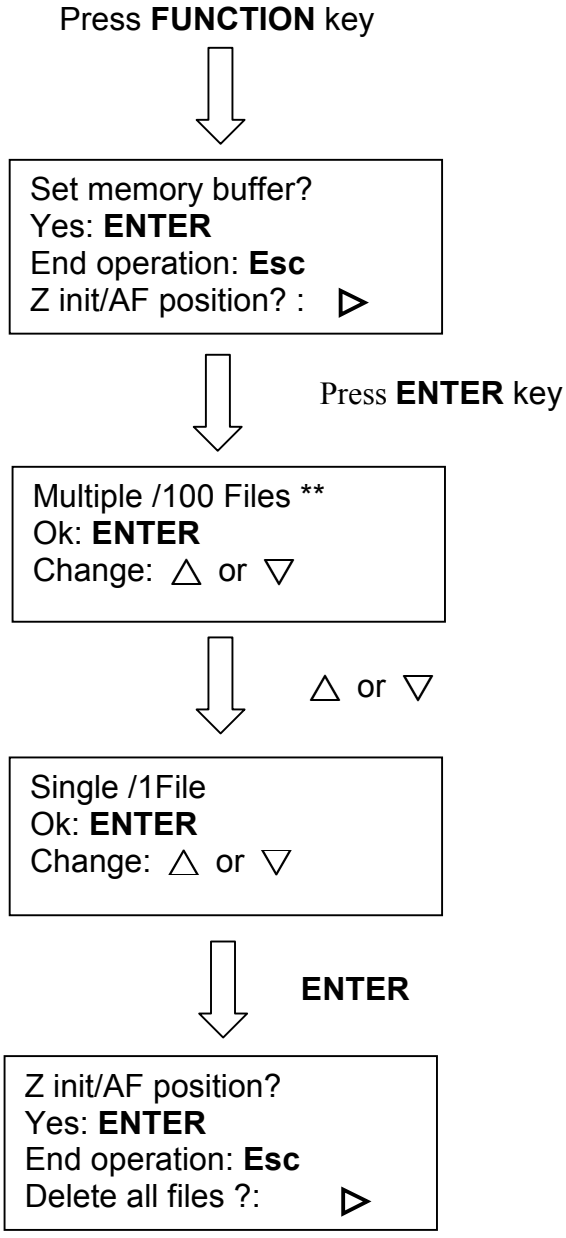
FUNCTION

- **Set memory buffer?**

Setting memory buffer in Single file mode when working with a large data file, or Multiple file mode (up to 100 files) that can be saved for constant engraving.

Under Single file mode, you can only output one job a time. Unlimited data can be transferred without saving in the buffer therefore once you want to repeat the job you have to re-send the file from the host computer.

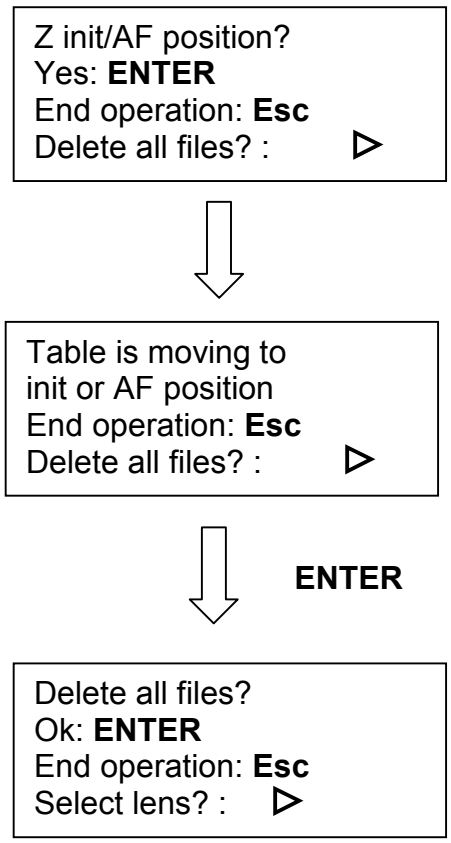
Under Multiple file mode, you can engrave one job while transfer and design the next simultaneously until 100 files' memories are all used up.



- **Z init/AF position?**

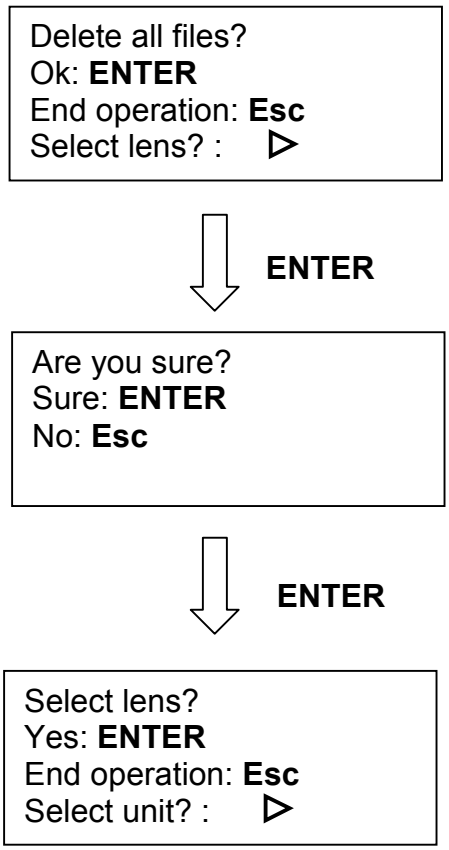
To avoid focus carriage hitting the engraving object accidentally during initializing, working table will move down about 50mm automatically after power on the equipment.

As long as you have not press **AUTO FOCUS** key, you can go into this function and move the working table back to the original position before initializing. Once the **AUTO FOCUS** key has been used, the last auto focus position has been saved in the memory. Therefore, you can move the table to the last auto focus position instead of the original Z position by using this function.



- **Delete all files?**

All files in the buffer will be deleted by using this function when setting under Multiple file mode.
This function is invalid under Single file mode. Once you stop or complete a job under Single File mode the file won't be saved in the buffer.

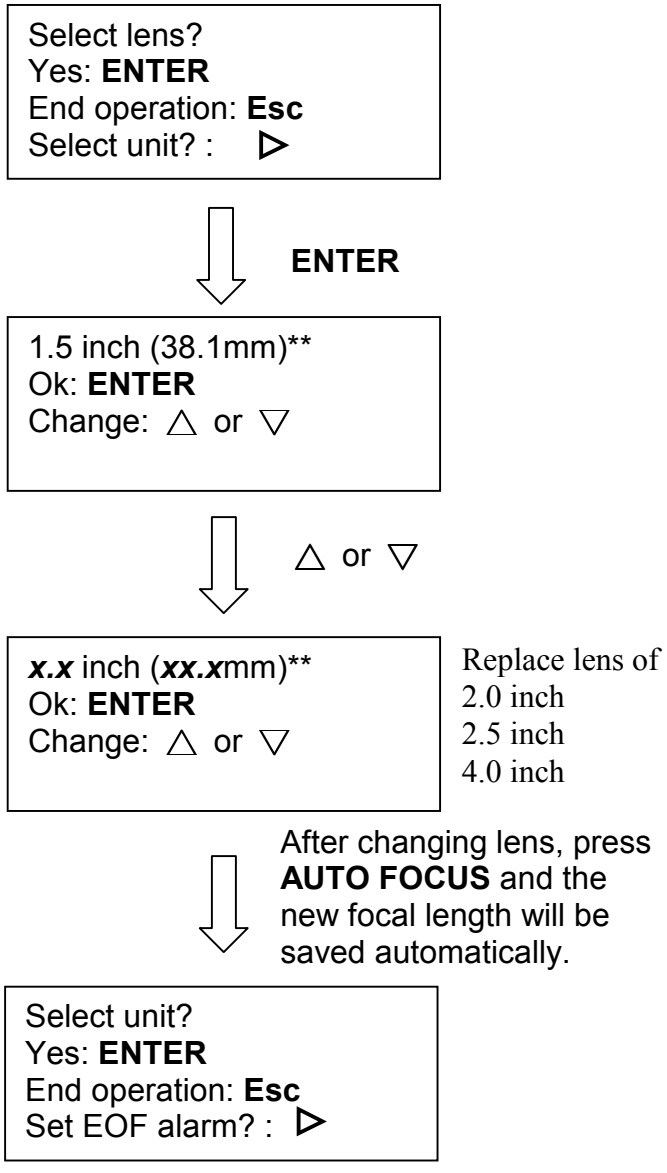


- **Select lens?**

There are four different lenses for use on the LaserPro JUPITER as follows:

Focal Length		Resolution	Cutting capability
1.5”	**standard**	**High**	**Thin**
2.0”	**optional**		
2.5”	**optional**		
4.0”	**optional**	**Low**	**Thick**

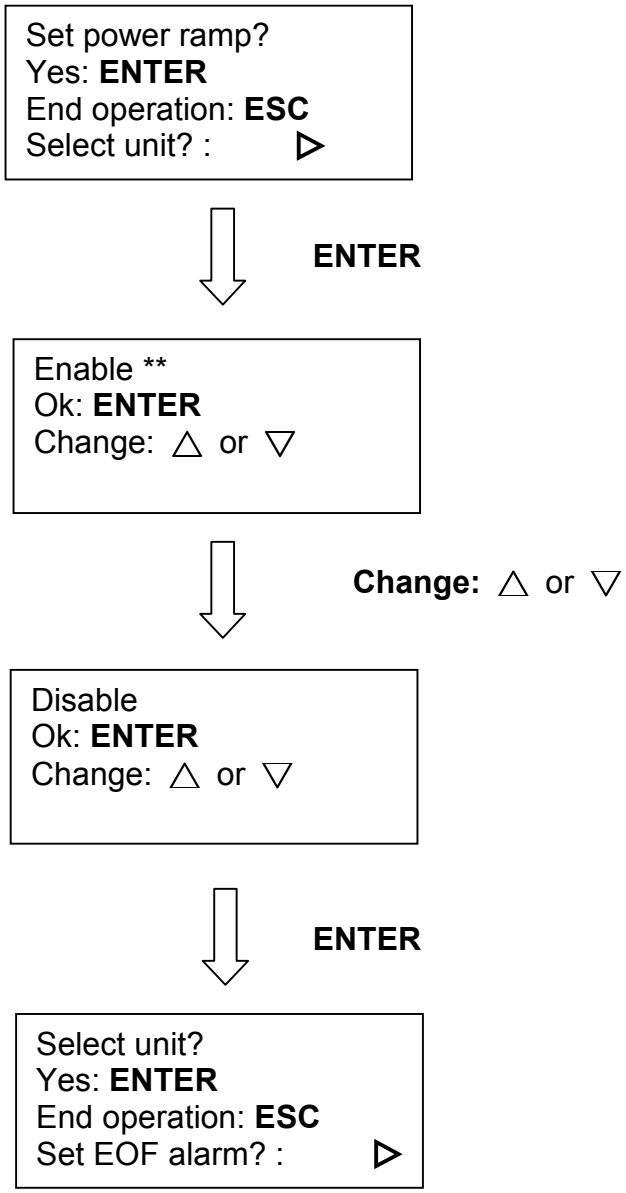
The longer the focal length, the bigger the beam spot size. The high resolution lens is designed for precision engraving, while the low resolution lens is mostly applied for cutting due to its lower beam divergence which results in a straighter cut in thick materials. However, using higher resolution takes longer time for engraving.
The large spot size of low resolution lens can spreads the laser’s heat over a larger area, which helps minimize melting thus can be applied to engrave certain kinds of plastics.



- **Set power ramp?**

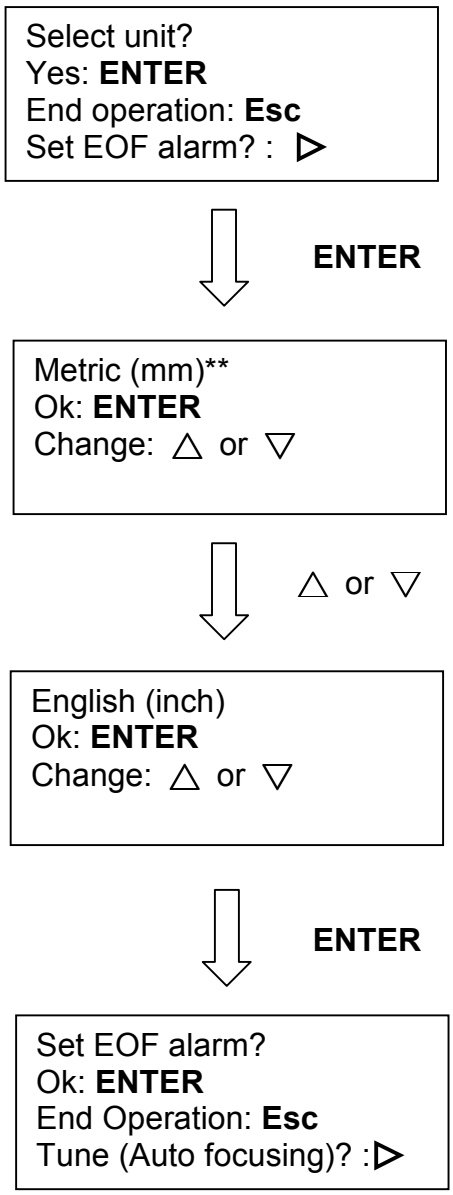
If set in Enable condition and cutting speed is 3% or above, under vector mode, the power control is enabled. If set in Disable, the power control is disabled.

Default : Enable



- **Select unit?**

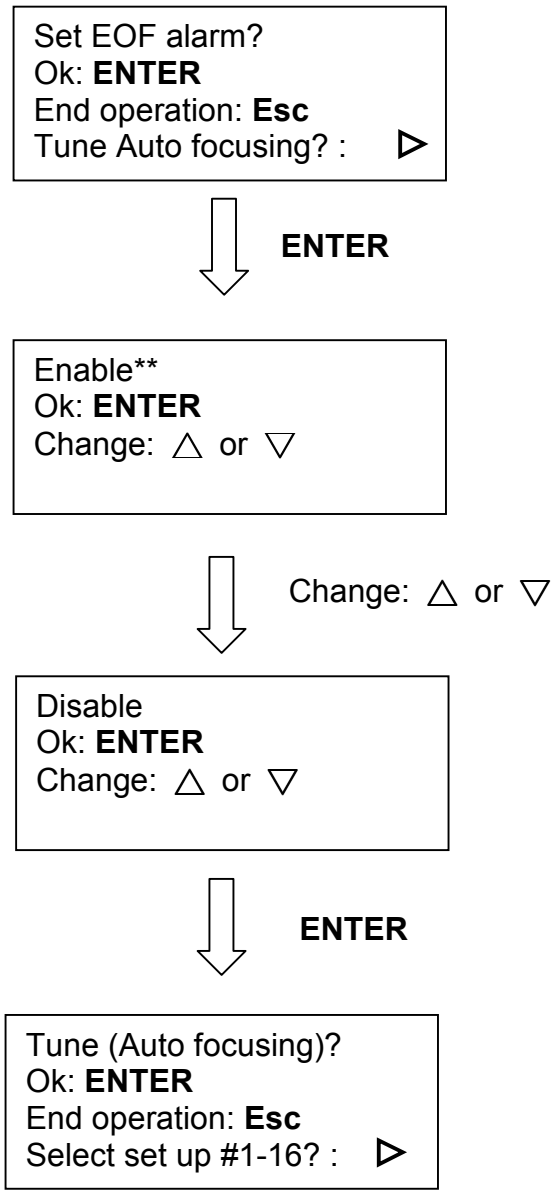
Set unit in Metric or English.



NOTE: ** means default or current setting.

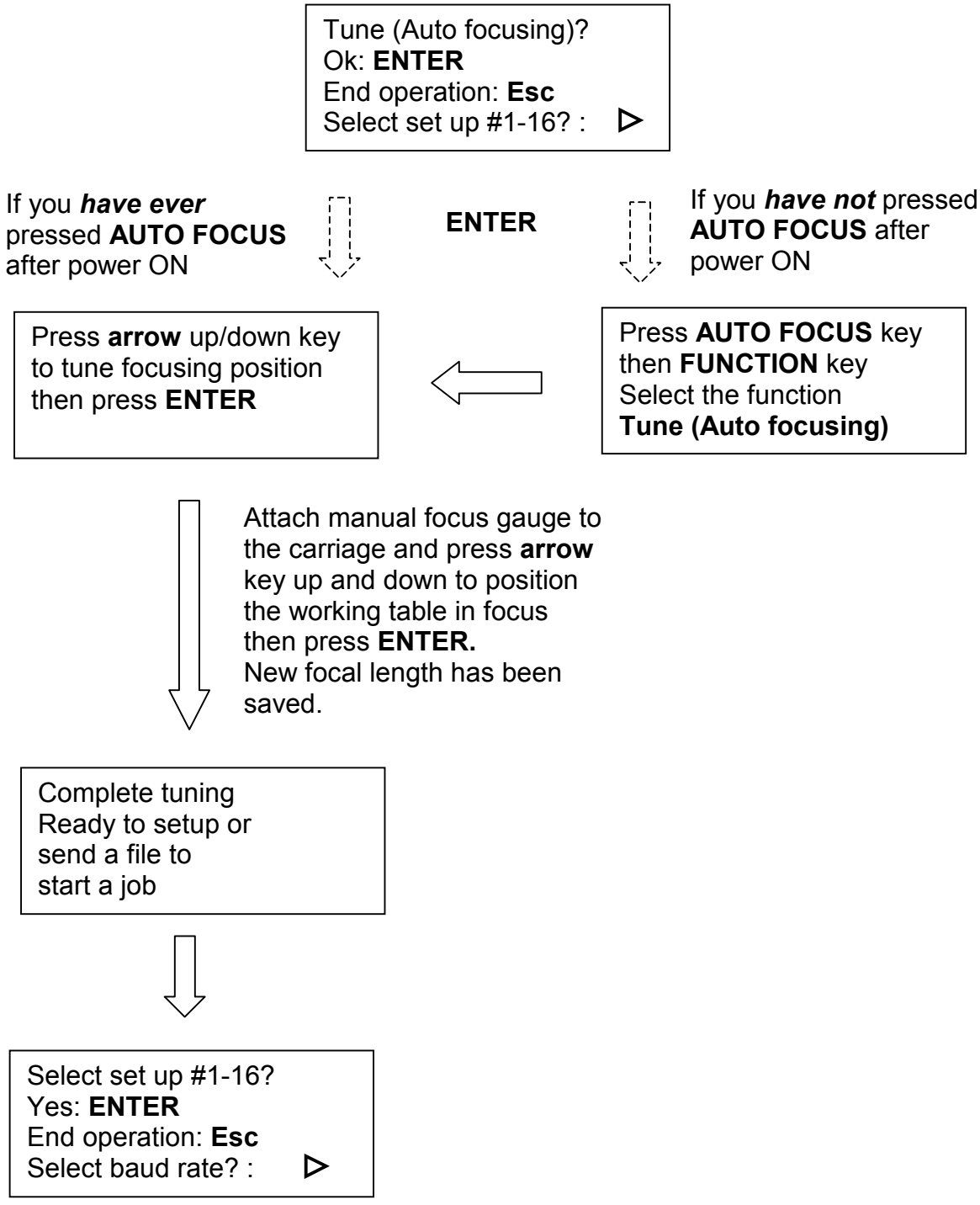
- **Set EOF alarm?**

If set in Enable condition, a beep tone sounds when **E**nd **O**F **F**ile.



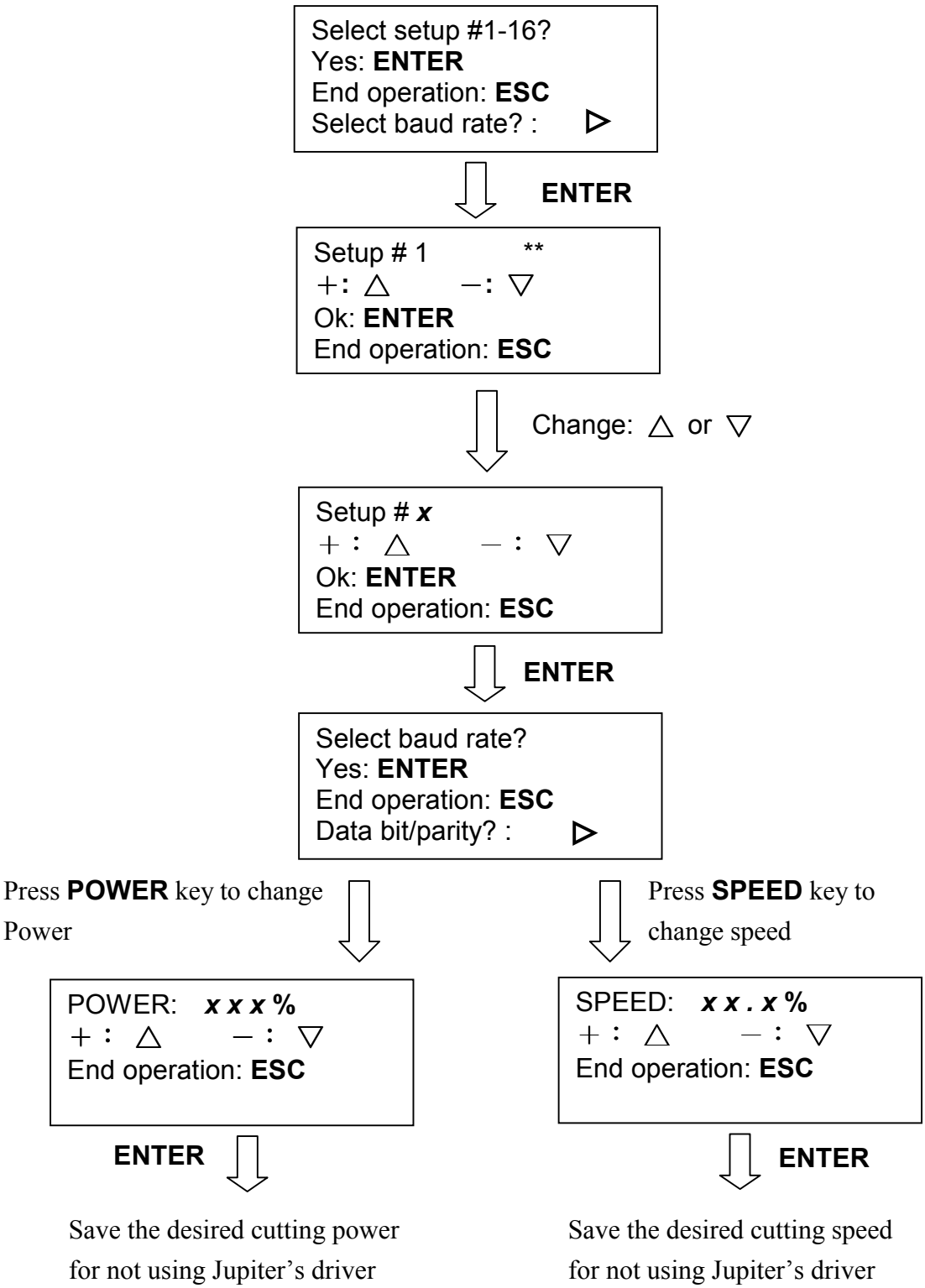
- **Tune (Auto focusing)?**

In case the focal length of Auto Focus needs to be corrected, please insert the corresponding manual focal tool to the hole of the holder shown as in the Figure of **LENS and MANUAL FOCUS GAUGE**. Then, operate as follows.


Tune (Auto focusing)?
Ok: ENTER
End operation: Esc
Select set up #1-16? :
If you have ever pressed AUTO FOCUS after power ON
ENTER
If you have not pressed AUTO FOCUS after power ON
Press arrow up/down key to tune focusing position then press ENTER
Press AUTO FOCUS key then FUNCTION key Select the function Tune (Auto focusing)
Attach manual focus gauge to the carriage and press arrow key up and down to position the working table in focus then press ENTER.
New focal length has been saved.
Complete tuning
Ready to setup or send a file to start a job
Select set up #1-16?
Yes: ENTER
End operation: Esc
Select baud rate? :

- **Select Set Up #1-16**?

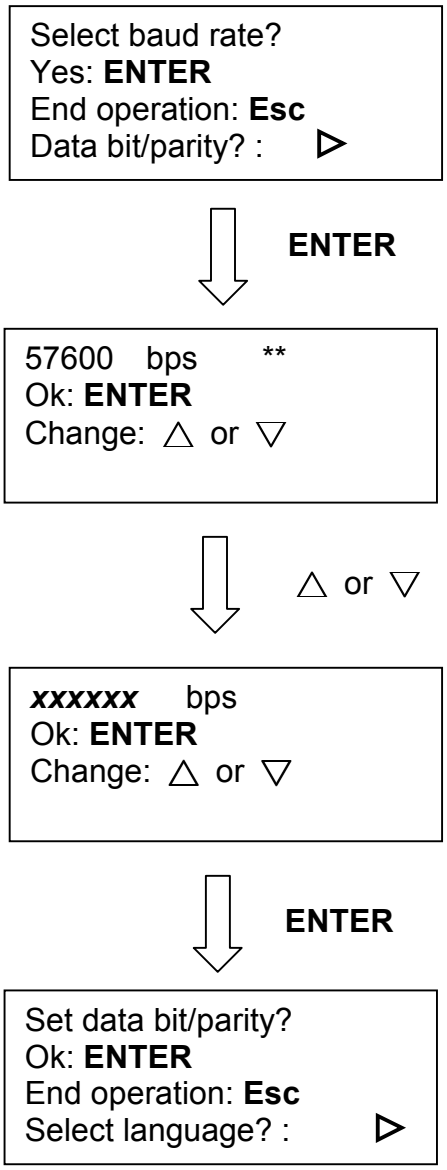
You can assign 16 different colors individually for speed and power to achieve a variety of cutting effects. **This function works when your software package can output HPGL plot without using JUPITER's driver.**



NOTE: ** means default or current setting.

- **Select baud rate?**

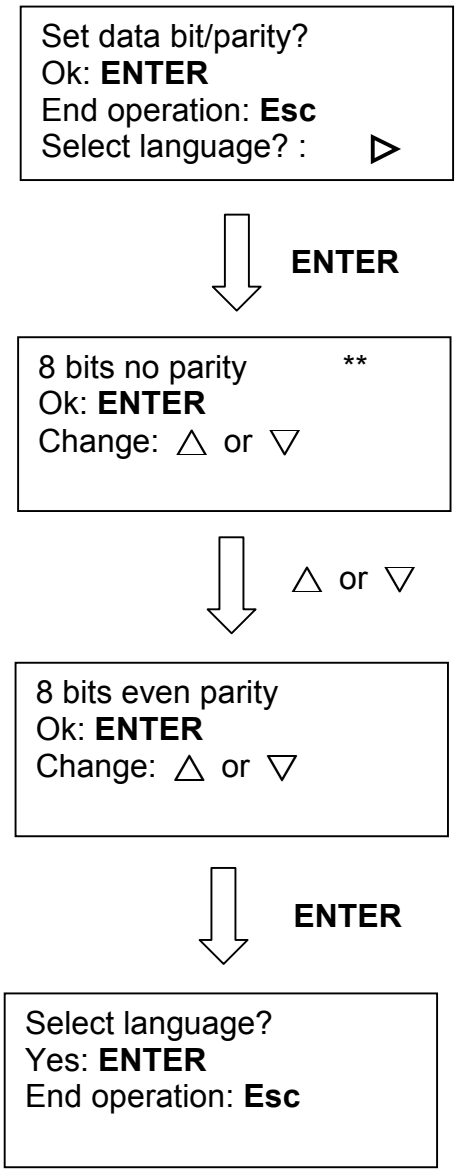
Baud rate is to determine the speed of data transmission to communicate with the host computer.
Setting range: 9600, 19200, 38400, 57600, 115200
Defaults: 57600



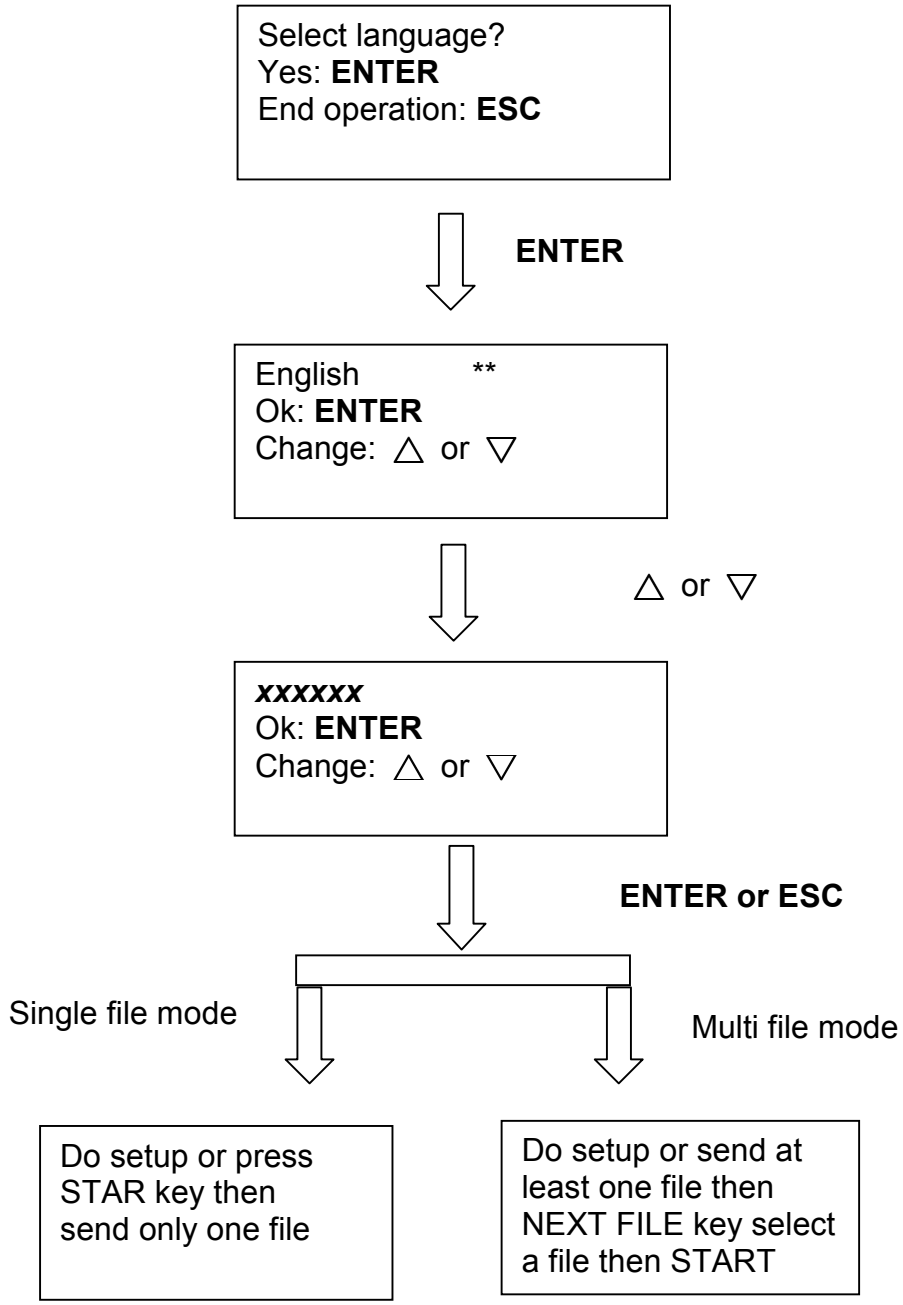
NOTE: ** means default or current setting.

- **Set data bit/parity?**

Data bits refer to the size of one block of data and **parity** is used to check if data was received correctly or not. The **data/parity** feature is to adjust the byte format and parity type in order to communicate with the host computer.



- **Select language?**



NOTE: ** means default or current setting.

Software Operation

After completing your editing job choose **File** ⟶ **Print,** click **"Properties"** (refer to Fig. 12)

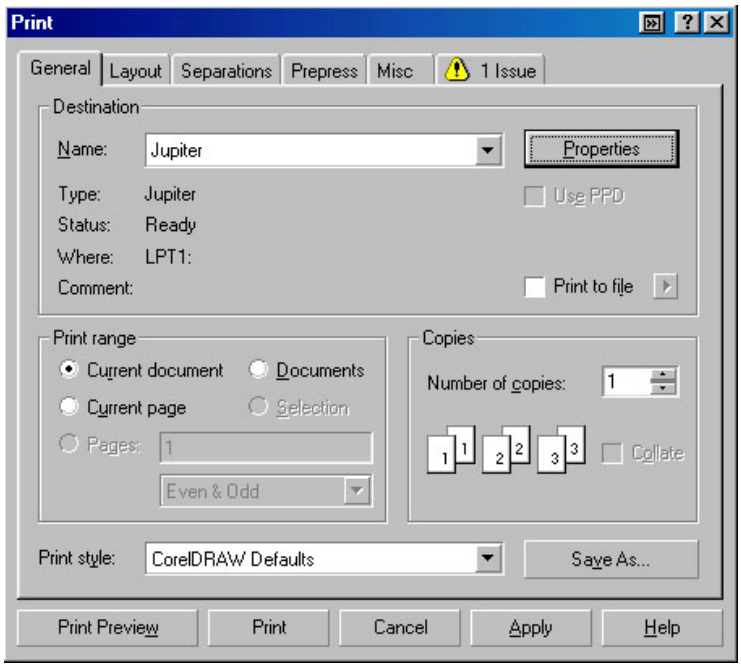


Fig. 12

Options: (refer to Fig. 13)

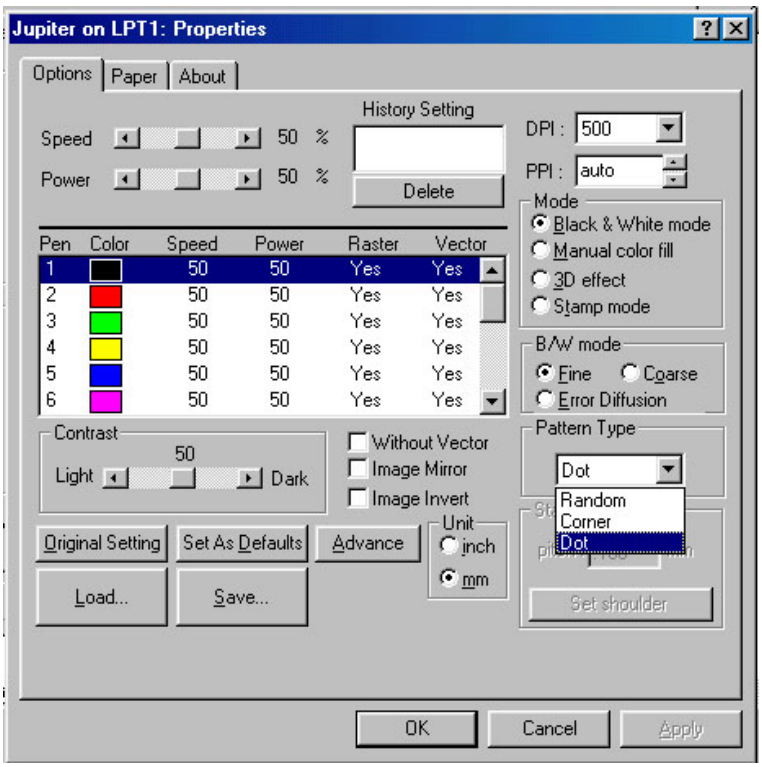


Fig. 13

Mode:

- **Black & White mode**

  Let you obtain half-tone effect quickly without going through complex steps of application (operating procedures shown as :a) Editing file, and b) Engraving, on the following paragraph) softwares to obtain the similar effect. You can choose the look of the laser engraved photo by applying one of the driver software's halftone options: **Fine**, **Coarse** or **Error Diffusion**.

  - **Fine**

    Apply a 17-grade-half-tone with 4x4 dots pattern, consists of a small and closely spaced dots.

  - **Coarse**

    Apply a 65-grade-half-tone with 8x8 dots pattern, consists of larger, more prominent dots. Represent a better contrast effect but result in a lower resolution than Fine Mode of 4x4.

  - **Error Diffusion**

    This is not really a halftone pattern but to manipulate the fill pattern in a photograph (a TIF image) through a series of random black and white pixels that represent shading. The random pixel pattern tends to result in an image that has more contrast and is more realistic looking.

  - **Contrast**

    Enhance the grayscale level to get a better image contrast result in a good engraving image (refer to Fig.12).

  - **Pattern Type**

    The Fine or Coarse halftone pattern has three kinds of layout options.

    Dot (default setting)- A halftone pattern consists of dots.

    Corner- The dark dot spread from the left upper corner of the pattern result in a little triangle shape to imitate a shading effect.

    Random- A random halftone pattern.

NOTE: Black & White mode is the easiest way to get the half-tone effect. However if a higher image quality is required, please refer to the following steps operated by **CorelDRAW V. 8.0.**

a) Editing file:

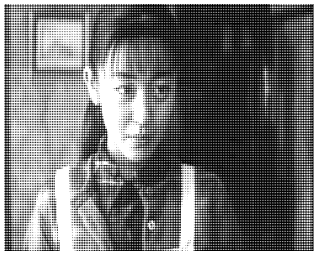
Layout ⟶ **Page Setup** ⟶ **Set from Printer, Landscape** ⟶ **OK** ⟶ Edit desired file (picture etc.) ⟶ **Bitmap** ⟶ **Transfer to Bitmap**, **256 shades of gray** ⟶ chose proper DPI ⟶ **OK** ⟶ **Bitmap** ⟶ **Convert to** ⟶ **Black and White,** choose **error diffusion** ⟶ **OK**

b) Engraving (Printout):

File ⟶ **Print** ⟶ **Properties,** choose **Options** and the default mode is set up at **Manual color fill** then set up proper resolution, power and speed ⟶ **OK**

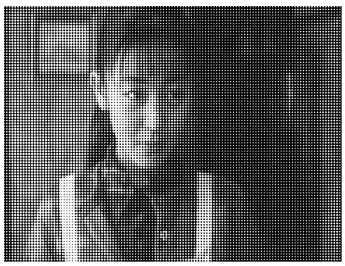
NOTE: Please refer to "**NOTICE**" of **Quick Menu** in the front page.

Fine



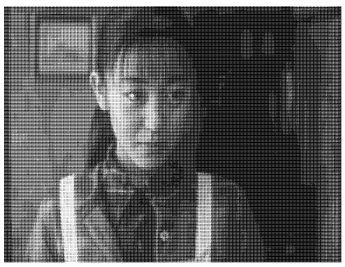
Contrast 10

Dot



Coarse

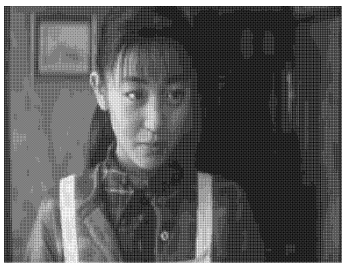
Contrast 50



Corner

Error Diffusion

Contrast 80



Random

Fig. 14

3D Image File

Sample/ Material: Density Board

Fig. 15

- **Manual color fill**

  Each power and speed setting can be linked to certain color on the layout. Totally 16 color settings are available. The desired color can be adjusted by changing the ratio of Red, Green and Blue (refer to Fig.13). If the speed or power is set to 0, the corresponding color area or vector line will be invalid.

- **3D effect**

  With this function, we can get the sculpture effect. The engrave image must have gray levels. The engrave image is effected by PPI, DPI, power and speed setting. (Refer to Fig. 15)

- **Stamp Mode**

  Mainly used in rubber stamp production. Create a slope base of stamp characters by setting up the **stamp parameter** (refer to Fig. 16). Normally the pitch number for engraving a 2~3mm thick rubber pad can be set at 0.2 or 0.3. The smaller the pitch number, the sharper the slope. If setting the pitch number at a very big value, it may take for a very long time for the math calculation.

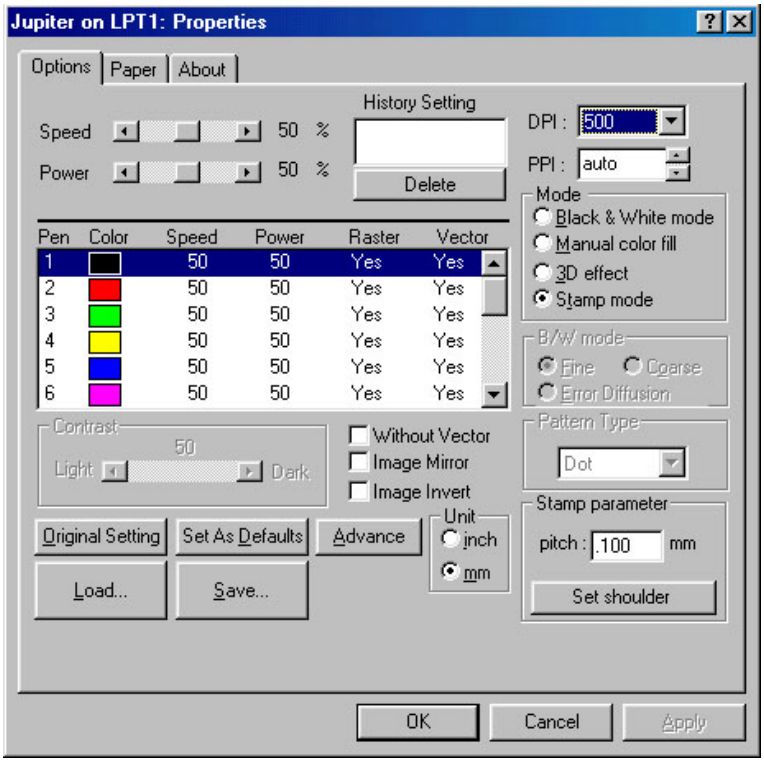


Fig. 16

For example, to engrave stamps with L-25 (25Watt), depends on the thickness of the rubber pad. 2~3mm rubber pad for instance, the ideal power is 100% at speed around 7%. The pitch value varies depending on the size of text; the bigger the letter is, the bigger the pitch value is required. With 1cm size letter, for example, 0.1~0.3 pitch value is enough. It is hard to tell exactly which model of LaserPro most suitable for making stamps. Of course the higher the laser power is, the less time it takes to do the same job. It really needs to see what thickness of the rubber you will engrave on and the letter size you use for most applications. The bigger the pitch value is, the longer time computer will take to process.

- **Power Level of Stamp Mode**

  This function is to adjust the power distribution of the slope shoulder to get the better shape of stamp's vertical profile. Select "set shoulder" in the page "Options". Enter the dialog box of stamp parameter. The black bars in the center are for the surface of each letter, while the blue bars are for the shoulders. Adjust the value of power level by adjusting bar or the left click of mouse to edit the shape of the shoulders (refer to Fig. 17).

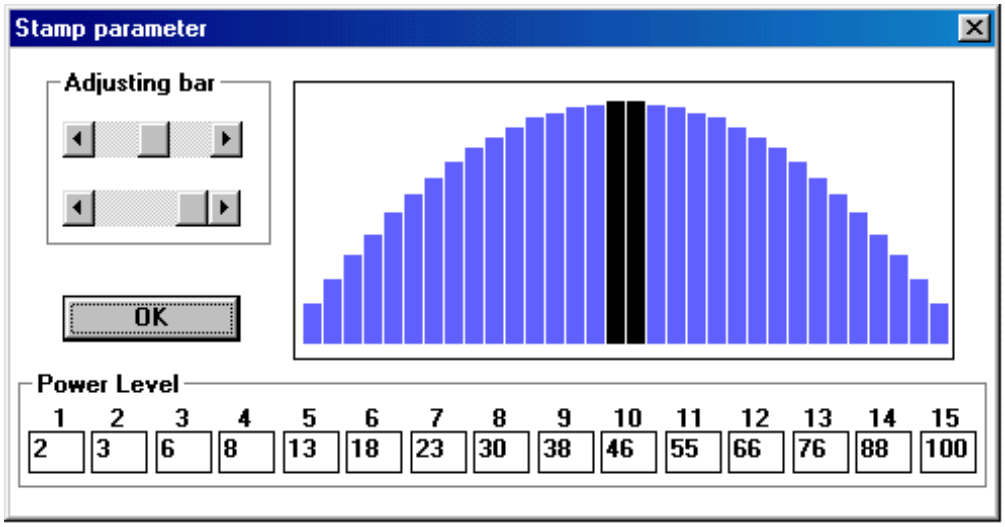


Fig. 17

- **Image Invert**
  Reverse the black and white image. Remain the characters but engraving the rest areas of rubber stamps. This function is disable under the Manual color fill mode.
- **Image Mirror**
  Reverse the left and right side as a mirror image.
- **Without Vector**
  Output without vector data.

- **P.P.I.**
  P.P.I. stands for the laser firing pulse per inch.
  - **Purpose:** By changing the laser firing pulses per inch, the distribution of energy would be changed.
  - **Description:** The adjusted range is 30 to 1500 PPI or you can choose auto mode. When choosing auto mode, the system will come up with the proper PPI value automatically. In order to maintain the quality of raster graph, the PPI value will at least equal to DPI value automatically even you set the lower PPI value than DPI value. In 100W machine, the PPI value of raster function always is auto.

- **Advance (Color Map)**
  Apply this function to detect if the power and speed settings linked to the right color used in your layout. Thus, some areas can be engraved deeper than others for desired effects. These settings can be saved for future use. The Advance function can map vector data for all four types of modes. While the raster layout

(except bitmap files) can only be applied with the Manual color fill.

Operation: Two steps to complete the process.

Step 1: Edit file ⟶ **Print** ⟶ **Properties** ⟶ Click **Advance** Select **Generate Color Map File** (refer to Fig.18) on the Advance Option dialog ⟶ **OK** ⟶ click **Print,** dialog shows "**Generate Color Map?**" choose **Yes** then enter **file name** ⟶ **OK** ⟶ map the desired parameters and colors accordingly ⟶ **Save**

NOTE: **Step 1** is for saving data files only. You have to go to **Step 2** to print out the file.

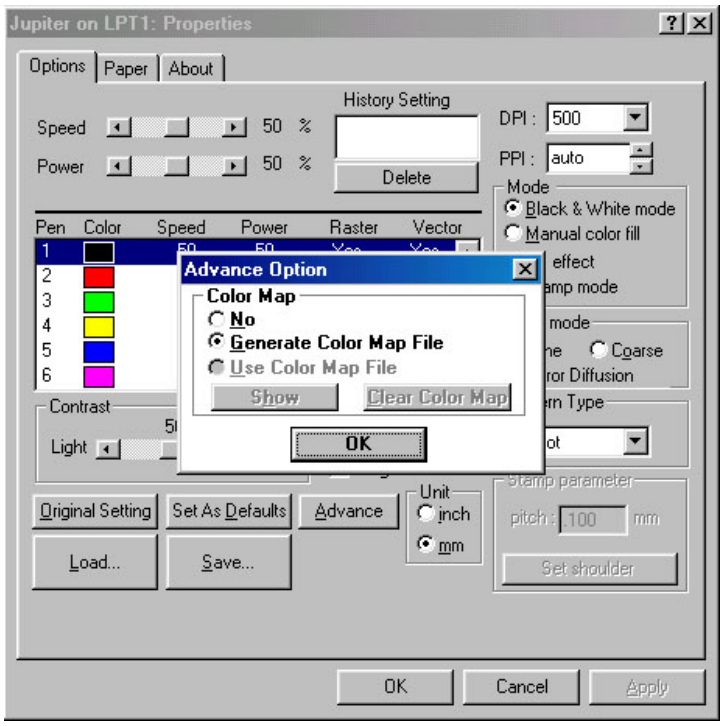


Fig. 18

Step 2: To output data

Print ⟶ **Properties** ⟶ **Load** then enter file name ⟶ **OK** ⟶ Click **Advance** ⟶ Select **Use Color Map File** (refer to Fig. 19). The power and speed are changeable as desired and you can click **Show** to see the data of the color map. ⟶ **OK** ⟶ **Print**

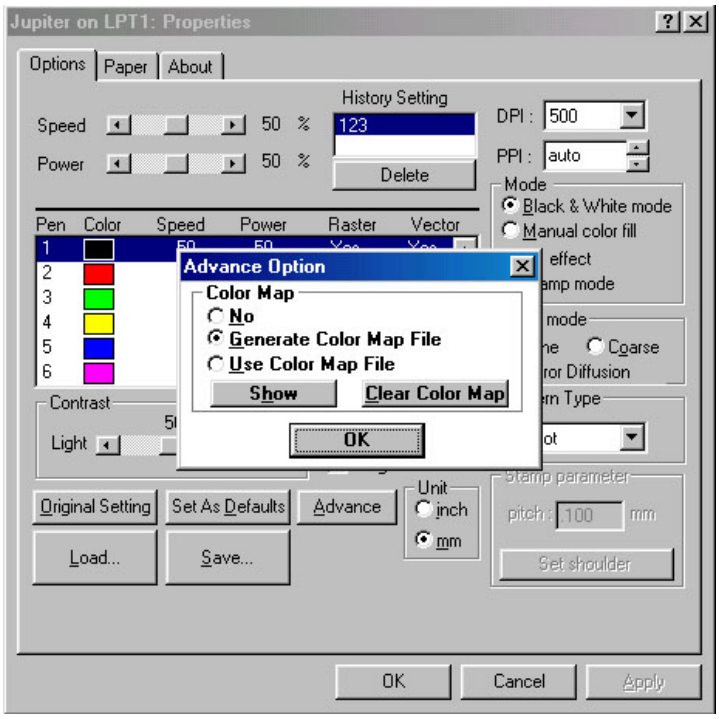


Fig. 19

- **Original Setting**

  Recall the default value set by manufacturer.

- **Set As Defaults**

  Save your constantly used parameters as a new default setting. Thus, whenever you open a new file, the default setting will be adopted automatically.

- **History Setting**

  Limited 10 constantly used files and parameters can be saved in the History Setting. To recall, please double click the file name.

- **Save**

  Clicking this button and give a file name to save your file or save the file into the History Setting through the instruction of dialog.

- **Load**

  Click this button to reload old file.

- **To modify color**

  Double click the color box (refer to Fig. 20) to modify the color by adjusting the RGB (Red, Green and Blue) ratio.

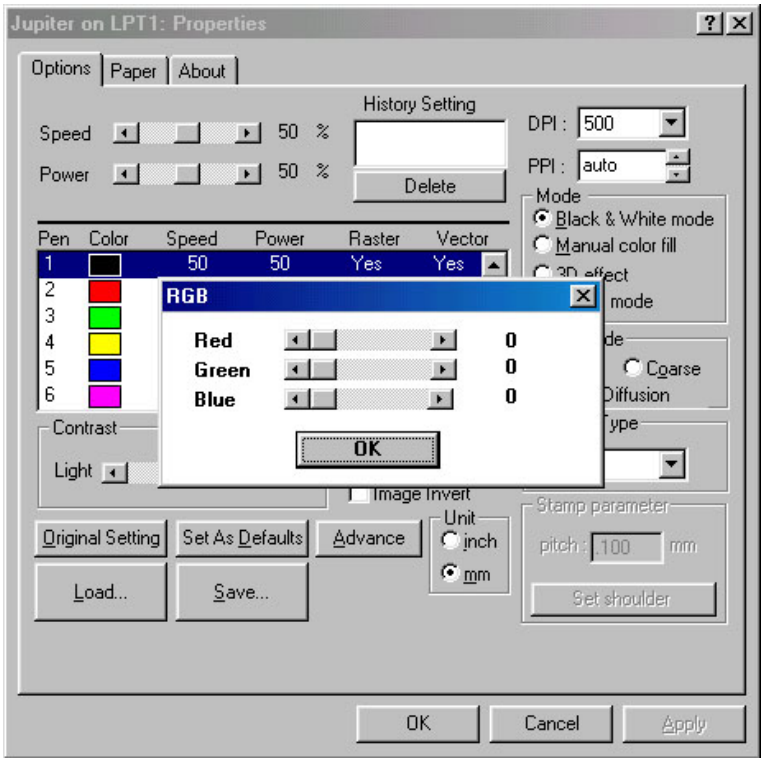


Fig. 20

- **Raster/Vector**

  Double click Yes/No to get the Raster/Vector output (Fig.21).

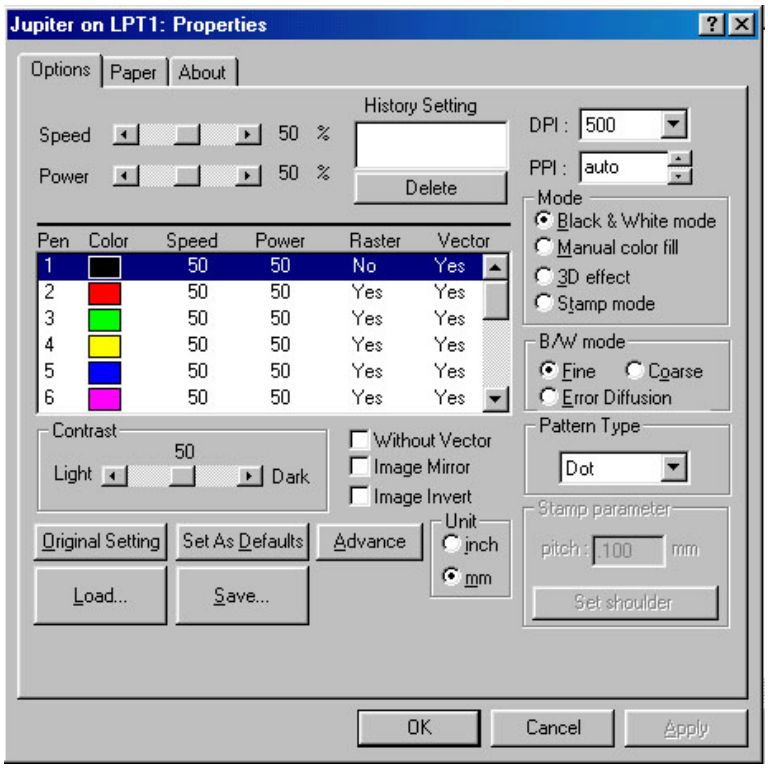


Fig. 21

Paper: (refer to Fig.22)

- **Paper Size:** Set up the working size for engraving.

- **Scaling Function**

  Apply this function to adjust the difference in size between the object in the page of software and the real object engraved. (Jupiter has 1/300 difference) Scale can be adjusted up to ± 50/1000. Positive value is to enlarge the size, negative to reduce. For examples, adjust the scale by +10 to enlarge the object's size by 10/1000.

- **Position Mode:** Working with this mode will disable the function of Rotary Fixture.
  - **Home:** Focus carriage goes back to the upper right position after finishing a job.
  - **Without Home:** Focus carriage stops at the last position of a data file.
  - **Relative Move:** You can place the focus carriage at any place you want to start a job. When finishing a job, the focus carriage will move back to the original starting point.

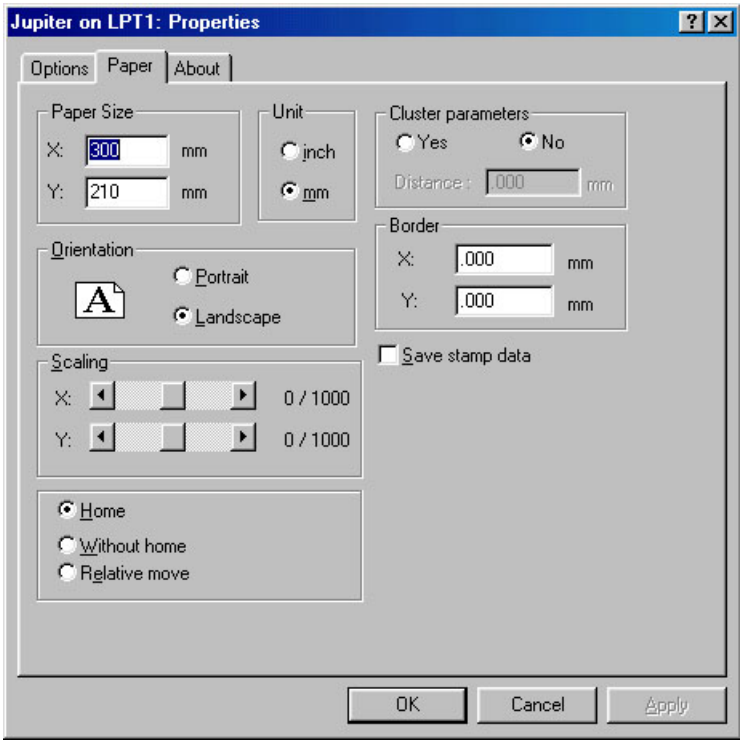


Fig. 22

- **Cluster**

  In order to reduce the working time, the output movement can be clustered under stamp mode.

  As for Fig.21, suppose the "Distance" you specified is D and the distance between graph A & B is X (refer to Fig. 23). If you chose the function "Cluster" and X > D, the output movement will be route b. If you don't chose "Cluster" or even you chose "Cluster" and X ≤ D, the output movement will be route a.

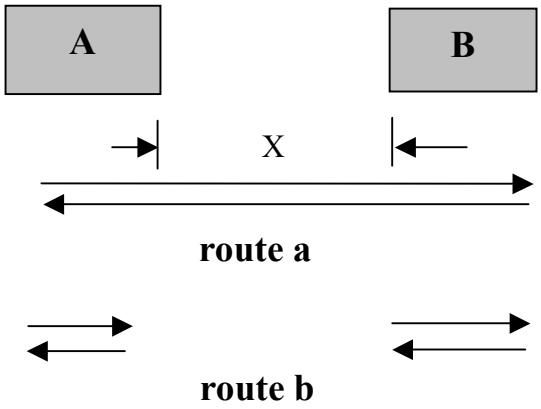


Fig. 23

- **Border**

  You can add border at image edge for a better output of the stamp image (refer to Fig. 22).

  You must select "Image Invert" (refer to Fig. 16) under stamp mode when using border. As for Fig.22, you can specify the border X and Y. If you chose the "Cluster" and want to have border, the border X and Y must be less than the "Distance" D you specified.

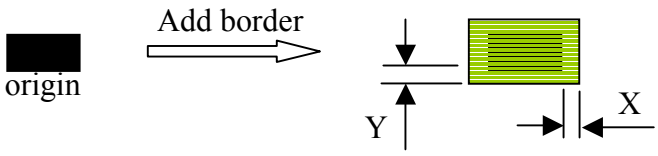


Fig. 24

VI. BASIC MAINTENANCE

Caution:

- Keeping the optics and motion system clean is essential to an excellent quality engraving and the reliability of your engraver. **Please clean Bearing track and X-axis (DU) bearing daily to maintain good condition of machine.**
- Never pour or spray any liquid directly onto the laser system.
- Turn off the power and unplug the system before cleaning.

1. **Inside the System:** Open the top door, the front door and the back door (if necessary). Vacuum to clean inside of the engraver and vent area thoroughly.
2. **Engraving Table:** Dampen the paper towel or cloth with alcohol or cleaner to clean the Engraving Table.
3. **Motion System:** Dampen the cotton swab to clean the rails of the Motion System. Get rid off any debris built up in the bearing tracks.
4. **Bearings:** Hold a dampened cotton swab against the bearing and moving the motion system by hand to clean each bearing.
5. **Mirrors and Lenses:** The focus lens and the mirror located on the carriage are the two components most likely to require cleaning once a week.

Caution:

Don't scratch out the soft coating of the mirror's surface. Excessive cleaning the mirrors and lenses may cause damage and reduce the life of the mirror (refer to Fig. 26).

Clean the mirror -

1. Unscrew and remove front cover of the focus carriage. Release the top screw and pull out mirror 5 carefully (refer to Fig. 27).
2. Put lens tissue on the mirror and drop a little lens cleaner on the middle area of the tissue (please refer to Fig. 25), after the fluid has been absorbed evenly, pull the tissue **one direction** gently to clean the mirror.
3. Let it air dry and re-install it.
4. Unscrew and remove the dust prevention cover then clean the Mirror 4 , same as above process .

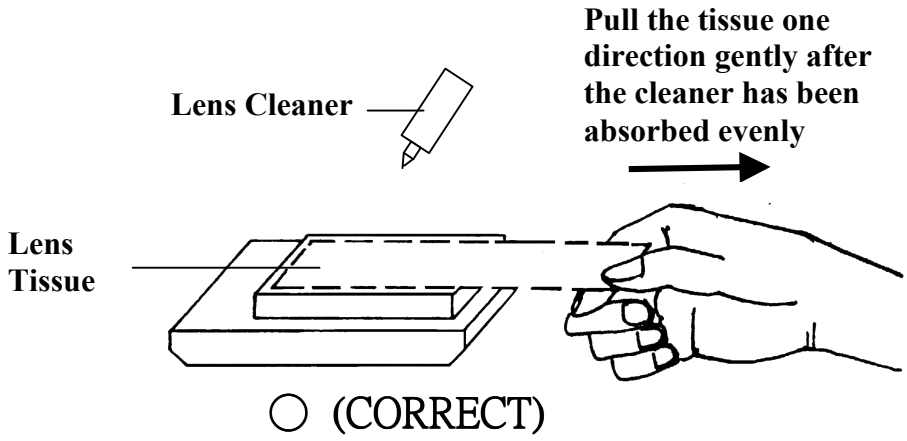


Fig. 25

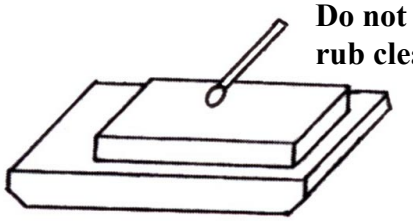


Fig. 26

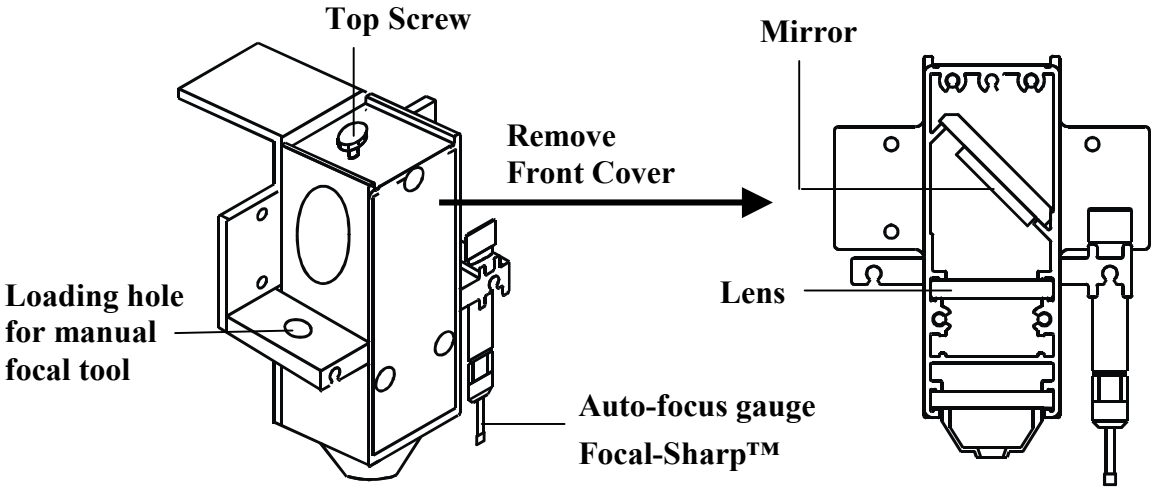


Fig. 27

- **Clean the focus lens –**
    1. Unscrew and remove the front cover of the focus carriage. Pull out focus lens carefully (refer to Fig. 27).
    2. Flood the focus lens with lens cleanser on both sides then using a cotton swab or lens tissue to dry off the remaining solution gently.
    3. Do not touch the lens surface with your bare hands or press down hard with any cleaning material.

VII. TROUBLE SHOOTING

Quality Problems

- Check focus length set under the function key to see if it matches the type of the lens installed.
- Focus Lenses are not installed correctly. Focus Lens loose in the holder.
- Debris or dust builds up in the bearing tracks or X-Axis rails.
- The focus lens and the mirror in the carriage are damaged or need to be clean.

Non-operational Problems

- **Laser beam does not generate.**
  1. If the red alignment beam is not revealed, the laser beam is misalignment. Adjust reflection mirrors for exact focus.
  2. If the red alignment beam is revealed, please check the driver power. The laser power may be too low to be detected. Please increase the percentage setting of the Laser Power from the software driver or the control panel.
  3. Please check if the laser power connector is loose.
  4. For safety purpose, the laser beam will not be generated when the top or front door is opened unless you short the connector of the magnetic switches.

LaserPro™ Jupiter

Jupiter	J-25	J-30
Laser Source	25W	30W
	Sealed CO_2 laser	
Work Area	11.8”x8.3” (300mm × 210mm)	
Max. Working Piece (W×D×Thick)	16.3” × 12.6” × 6.5” (410mm × 320mm × 165mm)	
Table Size	16.3”x12.6” (410mm × 320mm)	
Overall Dimensions W×D×H	28.7” × 24.4” × 59” (730mm × 600mm × 1500mm)	
Drive	DC servo control	
Speed Control	Adjustable from 0.02 to 42 inch/sec with up to 16 colors linked speed setting per job	
Power Control	Adjustable from 0～100% and 16 colors linked power setting per job	
Z Axis Moving	Automatic	
Resolution (DPI)	1000, 600, 500, 300, 250, 200	
Computer Interface	Print port and serial port for PC	
Memory Buffer	16MB standard upgradable to 64 MB with SIMM modules. Multiple file mode saves up to 100 files.	
Display Panel	4-line LCD display	
Power	100～240V, AC Auto Switch 10Amp	
Cooling	Air-cooled	

Above specification is subject to change without prior notice.

Optional Items:
- Odor Reduction System
- Air Assist System
- Dust Prevention Window
- Compressor for Air Assist

APPENDIX

Application Parameters

Engraving Parameter

Material	LaserPro	POWER%	SPEED%
Acrylic	L-12	100	100
	L-25	50	100
	L-50	25	100
Laminated Acrylic	L-12	80	100
	L-25	40	100
	L-50	20	100
Immitation Leather	L-12	100	100
	L-25	50	100
	L-50	25	100
Leather	L-12	60	100
	L-25	30	100
	L-50	15	100
Mat Board	L-12	100	50
	L-25	100	100
	L-50	50	100
Padauk	L-12	100	30
	L-25	100	60
	L-50	85	100
Sign Vinyl	L-12	50	100
	L-25	25	100
	L-50	12	100
Rubber	L-12	100	8
	L-25	100	15
	L-50	100	30
Brass Coated	L-12	100	100
	L-25	50	100
	L-50	25	100
Glass	L-12	100	30
	L-25	100	60
	L-50	85	100
Crystal	L-12	100	30
	L-25	100	60
	L-50	85	100
Poly buttons	L-12	100	30
	L-25	100	60
	L-50	85	100
Marble	L-12	100	30
	L-25	100	60
	L-50	85	100
Ceramics	L-12	100	50
	L-25	100	100
	L-50	50	100

Cutting Parameters

Material		LaserPro	POWER%	SPEED%
Acrylic	1mm	L-12	100	1
		L-25	100	2
		L-50	100	4
	2mm	L-12	100	1
		L-25	100	2
		L-50	100	4
	3mm	L-12	100	0.4
		L-25	100	1
		L-50	100	2
	4mm	L-12	100	0.4
		L-25	100	0.8
		L-50	100	1
	5mm	L-12	100	0.2
		L-25	100	0.4
		L-50	100	1
	8mm	L-25	100	0.2
		L-50	100	0.4
Rubber	2.5mm	L-12	100	0.4
		L-25	100	1
		L-50	100	2
Backlite	1mm	L-12	100	0.2
		L-25	100	0.4
		L-50	100	1
Plywood	3mm	L-12	100	1
		L-25	100	2
		L-50	100	4
	4mm	L-12	100	0.4
		L-25	100	0.8
		L-50	100	2
	5mm	L-12	100	0.2
		L-25	100	0.4
		L-50	100	0.8

Be noticed that above parameters are for reference only. Various kinds of elements, structures and component ratios may affect the engraving and cutting results differently.

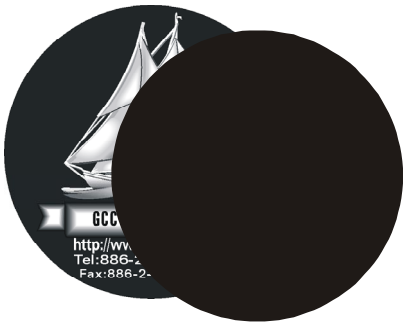
Appendix II. 3D Function

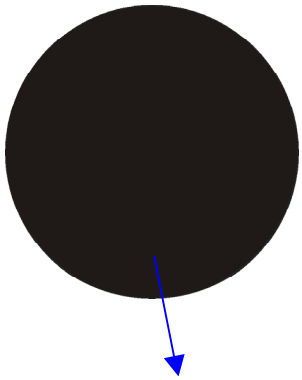
Tip for 3D Application

When doing 3D sample on LaserPro Mercury (L-25), acrylic or MDF wood are ideal materials for the purpose. For acrylic the suggested PWR is 100%, SPD around 30%(depends on how deep you want to cut).

The perfect image for 3D is like those shown below. When image is ready, choose 3D Effect as the output mode in the driver. Sometimes, some material shows better effect if you run the job with 2nd pass with laser out-of-focus. Especially with acrylic, the 2nd pass will smooth out the surface.

For engraving wood, as it burns easily and leaves blackened surface after the 1st pass, it is necessary to run the 2nd pass to remove the burned surface. To do that, simply fill the image with black colour as the mask (see below) and Run the black mask image with PWR 100% and SPD100%.





Create a black image for polishing

3D engraving / Material: 1cm Acrylic by Mercury 25W Lens: 2 inch

Step	Speed	Power	DPI	PPI	Focus	Remarks
1	25%	100%	600	auto	Auto Focus	3D Mode Engraving
2	25%	100%	600	auto	Lower down table 2.5mm	3D Mode Engraving
3	100%	100%	600	800	Lower table again 2 mm	Black and White Mode Polishing
4	0.2%	100%	500	auto	Move table up 1.3mm	Cutting off

3D engraving / Material: 1cm Acrylic by Venus 12W Lens: 1.5 inch

Step	Speed	Power	DPI	PPI	Focus	Remarks
1	13%	100%	600	auto	Auto Focus	3D Mode Engraving
2	13%	100%	600	auto	Lower down table 2.5mm	3D Mode Engraving
3	100%	100%	600	800	Lower table again 2 mm	Black and White Mode Polishing
4	0.1%	100%	500	auto	Move table up 1.3mm	Cutting off

Instructions for Pouncing Tool

This feature is to make perforated paper patterns that used together with a charcoal or chalk pounce bag. The patterns will allow you to transfer an image to surfaces for hand painting or cutting. Before pouncing on the paper, several things need to be noticed:

Step 1

Please examine supplied items in the accessory bag:

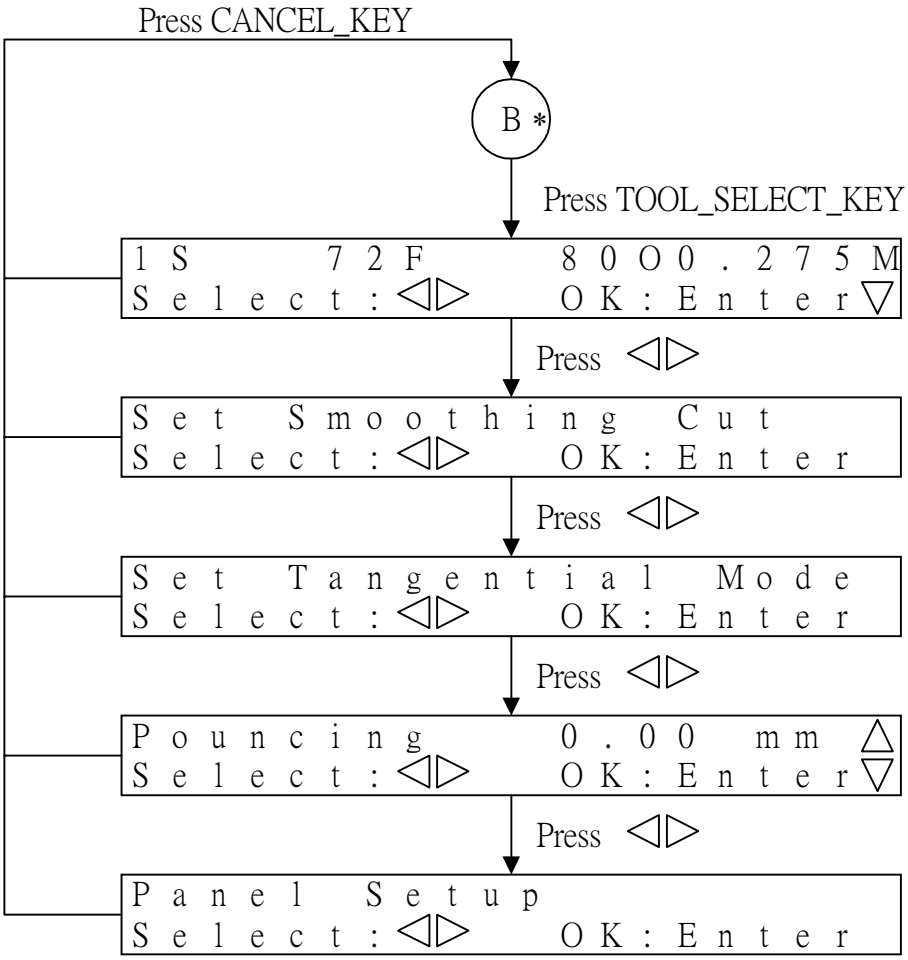
- 1 set of Pouncing Assembly
- 5 coils of Pouncing Pad
- 1 piece of ∅ 2 (1.5mm) L-shape hexagon screw driver.

Step 2

- You need to place Pouncing Pad on the top of the cutting pad. This will protect the cutting pad during pouncing.
- Place the Pouncing Tool into the tool carriage of the cutting plotter and tighten the screw to secure.
- Setting Range: 0 mm – 200 mm, for 0 mm is used to disable the pouncing mode.
  - *Tips: When finish pouncing, turn the paper over and sand the backside lightly with sander paper. This will open up the holes for better transfer of the image.*
  - *Note: Offset will be disabled when the pouncing value is not 0mm.*

Step 3

- SignPal *Jaguar* control panel



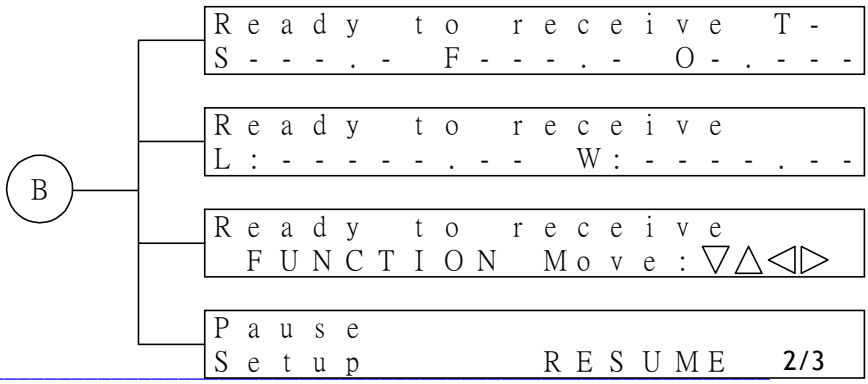
ENTER_KEY: confirm the change and goes to the next function.

LEFT_ARROW or RIGHT_ARROW: goes to the next function without saving the change

UP_ARROW or DOWN_ARROW: change value.

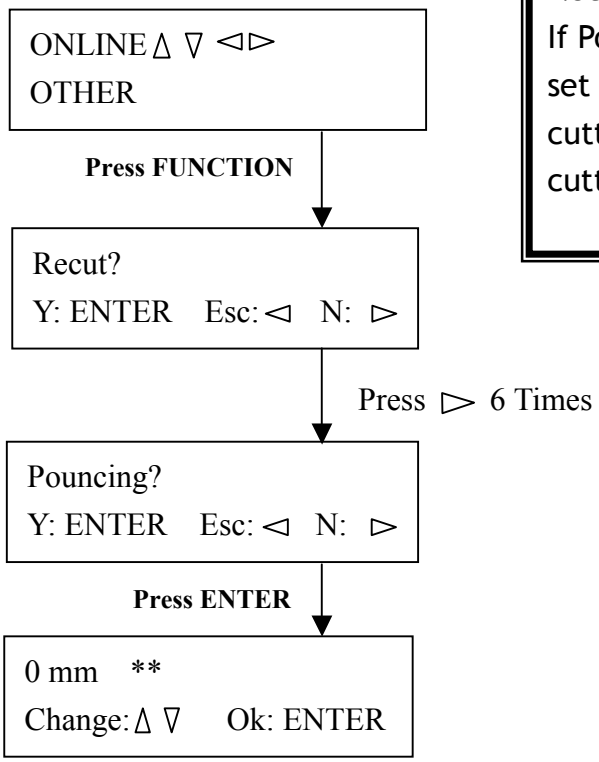
CANCEL_KEY: abort setting.

* Kindly be noted "B" stands for the below messages.



- SignPal ***Ultra*** control panel

Press the **"FUNCTION"** key while offline, the LCM will display as follows:



Note:
If Pouncing value is set at 0 mm, the cutter will work as cutting function.

Use △ ▽ to make a decision.
Press ENTER to confirm.
Then, press ON/OFF LINE or continue the next function.